ION®

Lighting Control Console Operations Manual

Version 1.3

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Introduction

Welcome to the Ion Operations Manual. This manual is a comprehensive resource for users of the Ion control console.

This chapter contains the following sections:

- ***Using this Manual*** 2
- ***Help from ETC Technical Services*** 3
- ***Important Concepts*** 4
- ***Other Reference Materials*** 8

Using this Manual

In order to be specific about where features and commands are found, the following naming and text conventions will be used:

- Facepanel buttons are indicated in bold **[brackets]**. For example, **[LIVE]** or **[Enter]**. Optional keys are indicated in **<angle brackets>**, for example, **<Cue>** or **<Sub>**.
- Browser menus, menu items, and commands you must perform are indicated in **bold text**. For example: In the **File** menu, click **Open**. Or: Press **[Record] [Preset] [Enter]**.
- Alphanumeric keyboard buttons are indicated in all CAPS. For example, TAB or CTRL.
- Keys which are intended to be pressed or held simultaneously are indicated with the "and" symbol. For example, **[Load] & [Timing Disable]**.
- Softkeys and clickable buttons in the Central Information Area (CIA) are indicated in bold **{braces}**. A note about **<More SK>** (more softkeys): this command is always indicated as optional, and is only indicated once in an instruction regardless of how many pages of softkeys exist. This is because there is no way to predict what softkey page you are on at any given time. Press **<More Softkeys>** until you find the required command.
- References to other parts of the manual are indicated in *italics*. When viewing this manual electronically, click on the reference to jump to that section of the manual.

Note: *Notes are helpful hints and information that is supplemental to the main text.*

CAUTION: *A Caution statement indicates situations where there may be undefined or unwanted consequences of an action, potential for data loss or an equipment problem.*

WARNING: *A Warning statement indicates situations where damage may occur, people may be harmed, or there are serious or dangerous consequences of an action.*

Please email comments about this manual to: **TechComm@etcconnect.com**

Register Your Ion

Registering your Ion system with ETC ensures that you will be notified of software and library updates, as well as any product advisories.

When you register, you will also be enrolled in “My ETC,” a personalized ETC Web site that provides a more direct path of communication between you and ETC.

Register now at http://www.etcconnect.com/product.registration.asp.

Help from ETC Technical Services

If you are having difficulties, your most convenient resources are the references given in this user manual. To search more widely, try the ETC Web site at www.etcconnect.com. If none of these resources is sufficient, contact ETC Technical Services directly at one of the offices identified below. Emergency service is available from all ETC offices outside of normal business hours.

When calling for assistance, please have the following information handy:

- Console model and serial number (located on back panel)
- Dimmer manufacturer and installation type
- Other components in your system (Unison®, other consoles, etc.)

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Important Concepts

Before using Ion, you should read and familiarize yourself with the concepts defined below. These concepts are important for understanding both how Ion functions as well as how you, as a programmer, will interact with Ion to produce a successful show.

You will find that understanding these terms and concepts will improve your efficiency with Ion.

Channel = Fixture

A fixture is defined as a group of related addresses that together control a device. An examples of a fixture would be an ETC Revolution. This moving light contains 31 attributes that together allow you to perform various functions such as pan and tilt. Each of these attributes is addressed by a different output.

Ion treats fixtures and channels as one and the same. Unlike former ETC consoles where a fixture occupied one channel for each parameter, Ion assigns each fixture a single channel number. Individual parameters are then associated with that channel as additional lines of channel information.

Output

Outputs are the method by which level changes to channels are conveyed to attached devices. These outputs are patched to channels. In its simplest form, an output is data signal sent from the console to turn on a light or modify a fixture attribute.

Record Target

A record target is any of numerous data locations that you can store data using a [Record] or [Record Only] command. Examples of record targets are cues, palettes, presets, and macros.

Move Instruction

A move instruction is any change to a parameter from its previous stored value. Any change to a channel's intensity is a move instruction. Any change to a channel's pan or tilt is a move instruction. Any change to a channel's color mixing is a move instruction, and so on.

Syntax Structure

Most instructions can be entered into Ion through the command line. When entering data into the console, the Ion command line expects instructions to be entered in a specific structure, or syntax.

Generally speaking, the order of syntax can be described as:

- What are you trying to affect? (Channel, group)
- What do you want it to do? (Change intensity, focus, pan and tilt)
- What value do you want? (Intensity at full, Iris at 50)

Naturally other commands will be used in the course of programming your show, but most other functions are modifiers of these three basic steps: modifying the channel(s) you are are working with, determining what parameters of those channels you are impacting, and what value you want them to assume. When working with record targets, the syntax is similar.

Note: *Not all actions on Ion must be entered from the command line, although many will result in a command line instruction. Other actions bypass the command line entirely.*

Enter

Since the command line can receive multiple edits and instructions at once, it is necessary to let Ion know when you have completed your instruction in the command line. This is done with the “Enter” key.

There are some commands which are self-terminating, and therefore do not require “Enter” to be pressed. Some (but not all) of these commands are:

- Out
- +%
- -%
- Level
- Actions from the direct selects

Parameters and Parameter Categories

Ion divides fixture parameters into four major *parameter categories*: Intensity, Focus, Color, and Beam. These are the parameters in each category:

- Intensity . . . . . Intensity
- Focus . . . . . Pan and Tilt
- Color. . . . . All color parameters (such as color wheel, CMY, scrollers, and so on).
- Beam . . . . . Any parameter not covered in the other categories.

Tracking vs. Cue Only

Ion is, by default, a tracking console. This means two things. First, tracking relates to how cue lists are created. Once data is in a cue list, it will remain a part of that cue list, at its original setting, and track forward through subsequent cues, until a new instruction is provided or until it is removed from the cue list using filters or null commands.

Secondly, tracking relates to how changes to cue data are handled. Unless otherwise instructed by a Cue Only command, changes to a parameter in a cue will track forward through the cue list until a move instruction (or block command) is encountered.

It is possible to change the default setting of Ion to “Cue Only”. This prevents changes from tracking forward into subsequent cues, unless overridden with a track instruction.

Ion also has a Cue Only/Track button that allows you to record or update a cue as an exception to the default setting. Therefore, if console is set to Tracking, the button acts as Cue Only. If console is set to Cue Only, it behaves as a Track button.

Move Fade

Move Fade is a lighting control philosophy which determines how cues are played back. Ion adheres to this philosophy.

In a Move Fade system, parameters do not change from their current setting until they are provided a move instruction in a cue or are given a new instruction manually.

For example, in cue 1, channel 1 has been given an intensity value of 50%. This value does not change until cue 20, where channel 1 is moved to 100%. Therefore, channel 1 has a tracked intensity value of 50% in cues 2-19. If the user applies a manual intensity value of 25% while sitting in cue 5 (for example), that channel will stay at 25% until Cue 20 is recalled - because 20 is the next cue in which channel 1 has a move instruction. The original intensity of 50% will not be reapplied in subsequent cues unless specifically called out by the cue or manually performed.

Cue List Ownership

Ion is capable of running multiple cue lists. In a multiple-cue-list console, cue list ownership is an important concept. Cue list ownership is determined by the cue from which a channel is currently receiving its value. In Live, a parameter is considered to be “owned” by a cue list when it is receiving its current value from that cue list.

When alternating between cue lists in sequential playback, an active cue list does not necessarily own a channel unless that list has provided the last move instruction for that channel. For example, assume a channel is owned by cue list 1 and is at a tracked value. If a cue from another cue list is executed and provides a move instruction for the channel in the new cue, the channel is now owned by the second cue list. It will not return to cue list 1 until that cue list provides a move instruction for the channel.

Assert may be used to override this default behavior, allowing a cue list’s control over a channel to resume, even when the channel’s data is tracked.

This rule is not followed when executing an out of sequence cue. An out of sequence cue is any cue that is recalled via “Go To Cue”, a Link instruction, or manually changing the pending cue. In general applications, the entire contents of the cue (both moves and tracks) will be asserted on an out of sequence cue.

Live and Blind

Live and Blind are methods to view and edit data in your show files. They are also considered to be specific displays within Ion. When you press the [Live] key, the screen will show you the live display. When you press [Blind], you will see the blind display. In either case, you may use the [Format] key to alter how the data is displayed (see *Using [Format], page 38*)

When in Live, the data displayed in the live display represents the data being sent from the console at that moment. In other words, the parameter data that is “live” on stage. When you edit data in live, those changes will become active and visible on stage as soon as the command line is terminated. Changes in Live therefore affect the live output from the console.

When in Blind, the data displayed in the blind display represents data from whatever record target you choose to view (cues, presets, palettes, and so on). When you edit data in Blind, changes will not automatically appear on stage, since the data you are modifying is not live. This is true even if the record target you are modifying is active on stage. It is possible to play a cue in Live, then switch to Blind and edit that cue in blind without affecting levels on stage. Edits in Blind do not require a [Record] command to be stored. They are considered stored when the command line is terminated.

HTP vs. LTP

HTP (Highest-Takes-Precedence) and LTP (Latest-Takes-Precedence) are terms used to define the output of a channel parameter that is receiving data from multiple sources. In HTP, the highest level of all sources will be executed. In LTP, the most recent level received will be executed. Submasters are only capable of controlling HTP intensities. Cue lists can operate as HTP or LTP for intensity parameters only. Non-intensity parameters (NPs) are always LTP. Ion’s default cue list setting for intensity is LTP (see *HTP/LTP, page 171*).

HTP

HTP is only applicable to the intensity of a channel. HTP channels will output the level that is the highest of all inputs. HTP channels are also referred to as “pile-on”, because as control inputs are added (for example - you may bring up cues and multiple submasters that all have the same channel recorded at various levels), the system calculates which input has the highest level for that channel and outputs that level for the channel. As control inputs are removed (you pull some of the submasters down to zero), the console will adjust the channel level, if required, to the highest remaining level.

LTP

LTP is applicable to any parameter of any channel. LTP output is based on the most recent move instruction issued to the channel parameter. Any new values sent to the channel will supersede any previous values, regardless of the level supplied.

Ion determines the LTP value for a channel, which is overridden by any HTP input values that are higher than the LTP instruction

Other Reference Materials

Help System

A keyhelp system is also contained within your Ion console. To access help, press and hold **[Help]** and press any key to see:

- the name of the key,
- a description of what the key enables you to do, and
- syntax examples for using the key (if applicable).

Note: *Keyhelp is included on most tangible action buttons on your Ion console. This includes most softkeys and clickable buttons as well as the traditional keys on the keypad.*

As with hard keys, the "press and hold [Help]" action can be also used with softkeys and clickable buttons.

Chapter 1

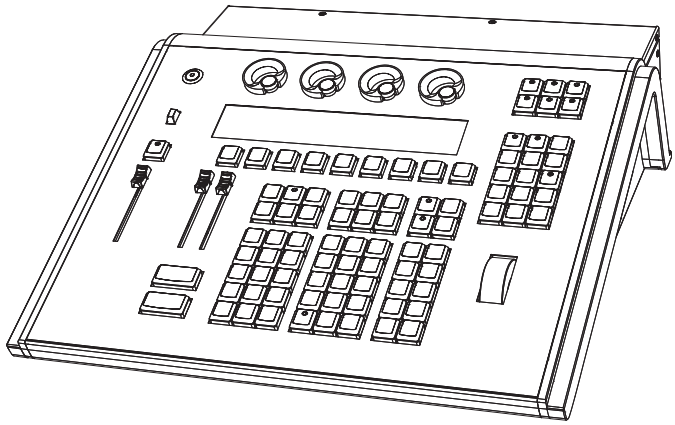
System Overview

Inside this chapter you will find general descriptions of your Ion control console, how it fits into a network control system, and the various areas of user interface.

This chapter contains the following sections:

- ***System Components*** 10
- ***Console Geography*** 12
- ***Cleaning Ion*** 13
- ***Console Capacities*** 14
- ***Outputting DMX*** 15

System Components



Console

Ion is designed from conception as a fully integrated controller for conventional lights and multi-parameter devices (for example: moving lights, color scrollers, gobo wheels). Attention to detail across all areas of the system design and architecture allows you the utmost flexibility and customization of use.

Ion allows designers and programmers to develop a mutual vocabulary for moving light control. This implementation of simple and uniform syntax for moving light control provides a solid foundation for both experienced and inexperienced moving light users.

Ion incorporates new technology to substantially speed up the programming process. It is the first control system designed with tools individually optimized for everyone who touches the console. Electricians, programmers, operators, and the design team will find features and functions specifically designed to assist them.

Remote Processor Unit (RPU)

The RPU can be used as the primary or backup processor for the system or for primary playback in installations that do not require a control console after initial programming is completed.

For more information, see the appendix *Remote Processor Unit (RPU), page 285*.

Remote Video Interface (RVI)

The remote video interface allows remote interaction with the lighting control system. This can be for display purposes only. Additionally, with a mouse and alpha-numeric keyboard attached, the RVI can be used as a remote programming station. The RVI provides supports for a maximum of two DVI or SVGA monitors, 1280x1024 minimum resolution.

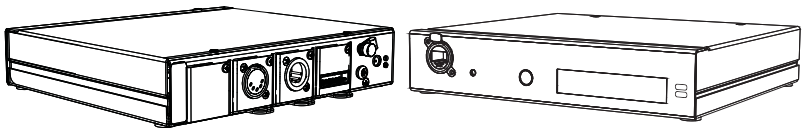
For more information, see the appendix *Remote Video Interface (RVI), page 289*.

Radio Focus Remote (RFR)

The RFR provides wireless control of key front panel functions.The base station for the RFR can be networked into the system, or can connect to a console or remote device using the USB interface.

For more information, see the appendix *Radio Focus Remote (RFR), page 293*.

Gateways

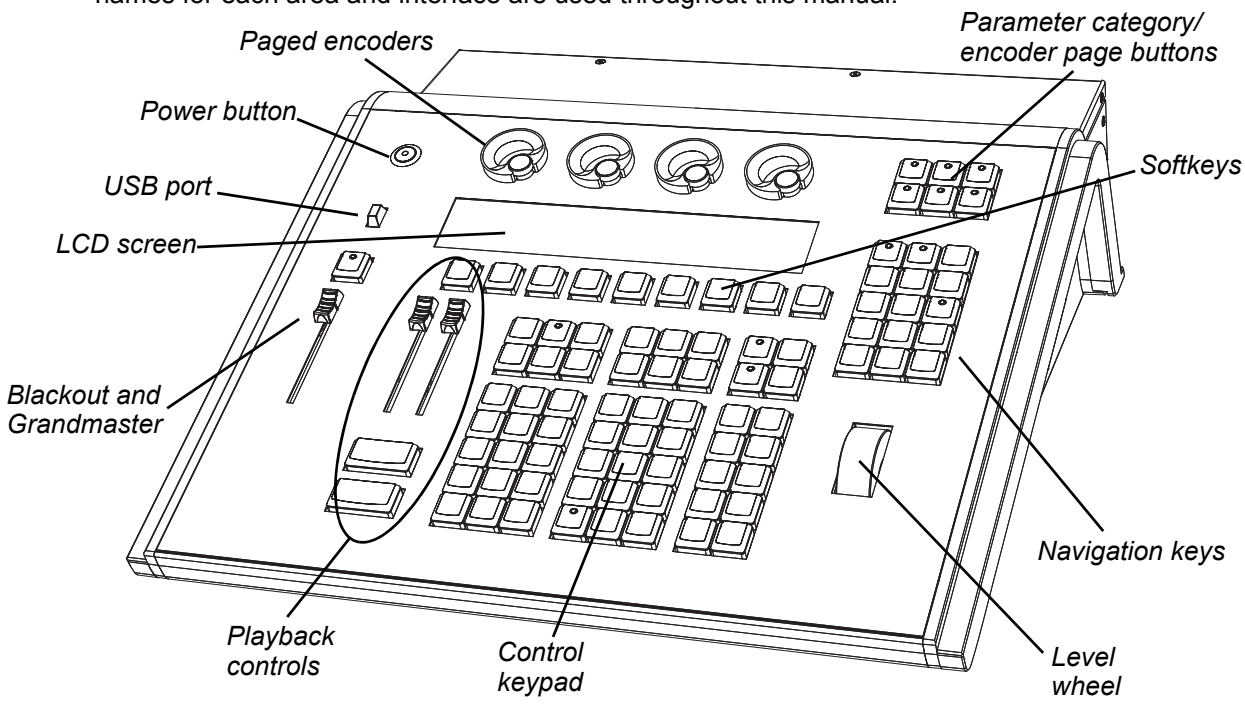


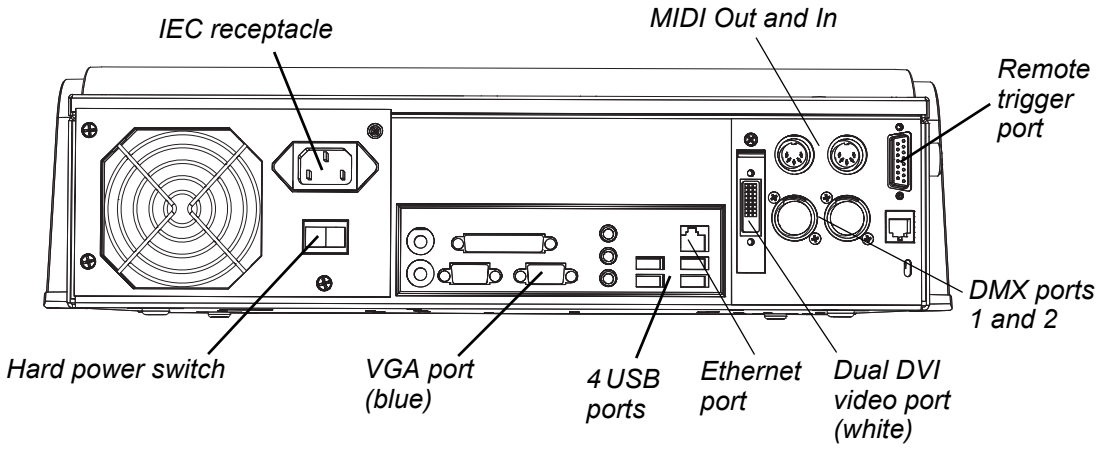
Ion is part of a fully networked system capable of direct output of both ETCNet2 and Net3. Gateways can be configured to listen to either ETCNet2 or Net3 and provide interface to devices in the lighting rig that do not accept network communication directly. Gateways are provided for DMX/RDM output, show control input and output and analog input and output.

- Net3 to DMX/RDM gateways are provided with a maximum of four outputs, which can be male, female, or terminal strip.
- Show Control Gateway supports MIDI In/Thru and Out and SMPTE In.
- I/O Gateway supports 12 analog inputs, 12 SPDT contact closure outputs and RS-232 serial protocol.

Console Geography

Below is a diagram of the Ion console with references made to specific areas of use. The terms and names for each area and interface are used throughout this manual.





Terminology

Power Button

The power button on the front of the console is used to shut down and power up the Ion console. A separate power switch, located in the rear panel of the console, can be used to disconnect power from the console's internal components.

WARNING: ***Before servicing the Ion control console, you must switch off the power from the rear of the console and disconnect the power cord completely.***

USB Ports

One USB port is provided on the front of the console to connect any USB storage device. An additional four USB ports on the rear panel of the console can be used to connect peripherals such as an alphanumeric keyboard, pointing device, or touchscreen control for external monitors.

Encoders

Encoders and the LCD (see below) for control of non-intensity parameters are provided at the top center of the console. The four encoders are pageable controls, which are populated on the LCD with the parameters used in your show.

The encoders can also be used to enter information into your patch.

LCD

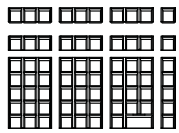
This display accompanies the CIA as an additional user interface. This LCD offers you softkeys, encoder information, display options, and an additional view of the command line.

Load

The load button is located above the fader pair at the bottom of the LCD and is used to load the specified cue or submaster.

Control Keypad

The control keypad area is divided into four general sections including record targets, numeric keypad, modifiers, and special function controls.



Level Wheel

Proportionally adjusts intensity for selected channels. It also provides scrolling and zoom functions in various modes.

Navigation Keypad

Used for quick access to the live and blind displays, tab selection, location, paging and navigation within displays.

Parameter / Category Buttons

Parameter buttons are used in conjunction with the Central Information Area (CIA). When certain functions need to be accessed, a group of related parameters will populate in the parameter category display.

IEEE Ethernet 802.3af Ethernet Ports

Ethernet ports (including Power-Over-Ethernet) for connection to a network switch, network gateways, and accessory devices.

Littlites®

You may connect Littlites to the back of your Ion console.

Cleaning Ion

Should the exterior or LCD of your Ion require cleaning, you may gently wipe them with a dampened (**not dripping**), non-abrasive paper towel or soft cloth.

If this does not clean them sufficiently, you may apply some window cleaner (containing ammonia is fine) to the cloth and repeat the process until clean.

Console Capacities

Output Parameters

- 1,000 outputs (DMX channels)

  -or-

- 1,500 outputs (DMX channels)

  -or-

- 2,000 outputs (DMX channels)

Channel Counts

- 5,000 channels

Cues and Cue Lists

- Up to 99 cue lists
- Up to 10,000 cues

Record Targets

- 1,000 Groups
- 1,000 x 4 Palettes (Intensity, Focus, Color and Beam)
- 1,000 Presets
- 1,000 Effects
- 1,000 Macros

Faders

- 1 dedicated Master Playback, with Go and Stop/Back
  - a maximum of 30 configurable playbacks, with Go and Stop/Back
  - a maximum of 240 configurable submasters, with Bump and Solo

Outputting DMX

In order to output control levels from Ion, you can either configure the DMX ports on the back of the console (see *Local DMX, page 275* in the ECU appendix) or you may connect a Net3 gateway or Net2 node. If your device receives Net3 or ETCNet2 directly, no gateway or node is required.

Nodes and gateways must be given an IP address before they can function with Ion. This may require using NCE (Network Configuration Editor) and a Windows® PC to configure the gateways or nodes. The NCE Software CD and related user manuals and setup guides were packaged with your gateway or node. Use these materials to prepare them for use with Ion.

For more information on Net3 gateways or Net2 nodes, see the product literature that accompanied the hardware or download it from our website at www.etcconnect.com.

Chapter 2

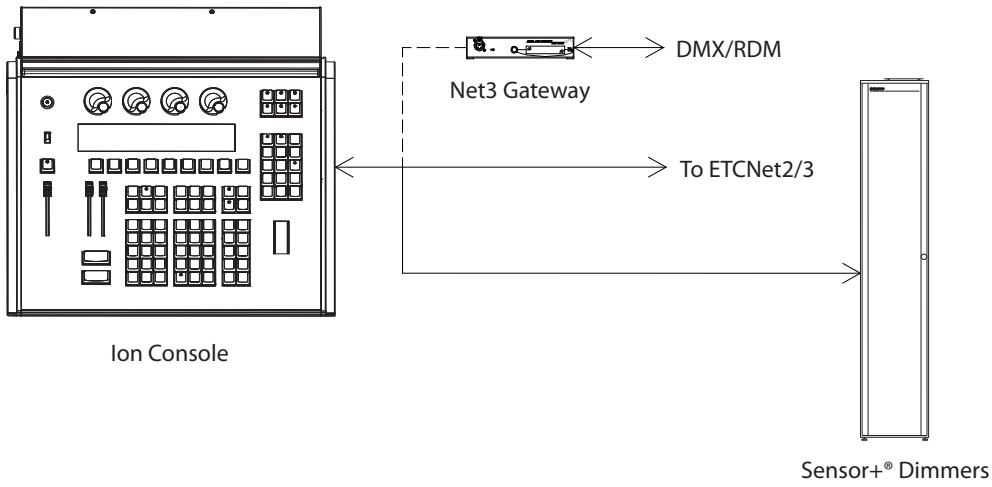
System Installation

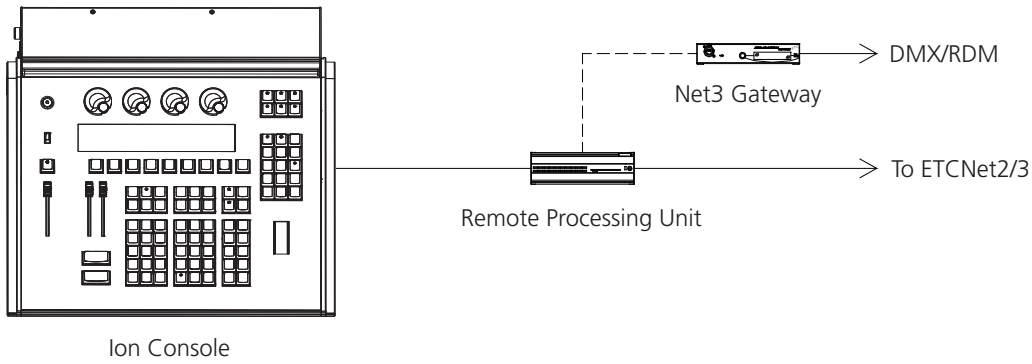
This chapter depicts the placement of Ion in a few lighting system risers. It also details connection of the various components of your Ion hardware.

This chapter contains the following sections:

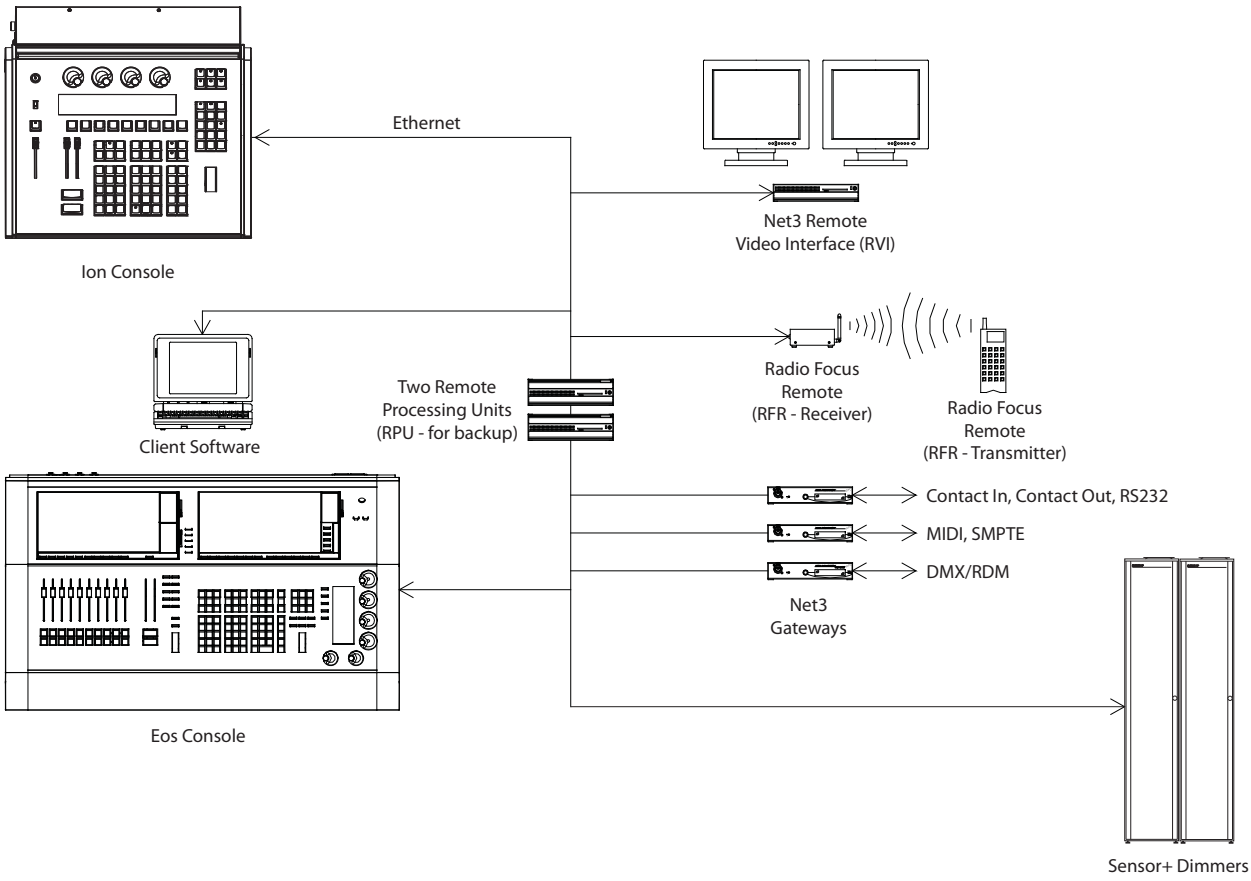
- ***Basic System Risers*** 18
- ***Large System Riser*** 19

Basic System Risers





Large System Riser



Chapter 3

System Basics

This chapter explains the base level procedures for setting up, navigating, and understanding how to operate Ion.

This chapter contains the following sections:

- ***Setting Up the Hardware*** 22
- ***Power*** 23
- ***The Central Information Area (CIA)*** 27
- ***Using the Browser*** 28
- ***Display Control and Navigation*** 31
- ***Graphical User Interface (GUI) Display Conventions*** 33
- ***Using [Format]*** 38
- ***Using Flexichannel*** 36
- ***Encoders*** 41
- ***Using Softkeys*** 41

Setting Up the Hardware

Follow these steps to prepare your Ion for use.

Step 1: Place your console on a firm, level surface. Be sure to leave space for access to the rear of the console. You will need to connect several items to the ports on the back.

Step 2: Connect any monitors to the proper ports on the back of the console. Your monitor connection choices are:

- Single VGA monitor connected to the blue VGA connector.
- Single DVI monitor connected to the white DVI port (using the “Y” cable).
- Single VGA (blue VGA port) and single DVI (white DVI port with “Y” cable).
- Two DVI monitors connected to the DVI port using the “Y” cable.

Note: *Any monitor attached to the DVI “Y” cable must be a DVI monitor. DVI-VGA adaptors will not work with the “Y” cable.*

Step 3: Connect the keyboard and mouse. You may use USB or PS2 devices. Attach to the appropriate connector on the back of the console.

Step 4: If you will be connecting to an Eos/Ion network, connect the appropriate ethernet (CAT 5 or better) cable to the ethernet port on the back of the console.

Step 5: If you plan on using the DMX ports on the back of Ion to control your lighting system, attach the appropriate DMX connector and cable to the desired port. This port may need to be configured before you can output data. For more information, see *Local DMX, page 275* in the ECU appendix.

Step 6: Attach the appropriate IEC power cable for your location to the IEC connector on the back of the console, just above the power switch.

Your console hardware is now ready to be powered up.

Power

Power up the console

Step 1: Attach the appropriate power cable to the IEC connector on the rear of the console.

Step 2: Press the I/O switch (I is “on”) next to the IEC connector on the rear of the console to turn power on. This will provide power to all internal electronics.

Step 3: Press the power button, located in the top left corner of the console, above the USB port. The button LED will illuminate blue to indicate the console is running. The console will boot up into the Ion environment.

Step 4: Click **{Let’s Begin}** in the CIA. The Ion system is now ready for use.

Power down the console

Step 1: After saving your show (see below), in the browser menu select **[File]**>**[Exit Ion]**. A dialogue box opens asking you to confirm.

Step 2: Confirm this command by clicking **{Yes}** in the dialog box. The Ion application will close and you will enter the Eos Configuration Utility (ECU - also know as the Eos Shell).

Click **{Shutdown}** in the ECU screen. Confirm again, the console will power down and the blue power LED will go out.

Note: *Ion is a persistent storage console. Therefore if you shut down your system without saving the show file, you will return to the same place in your show when you reboot.*

Your First Interaction

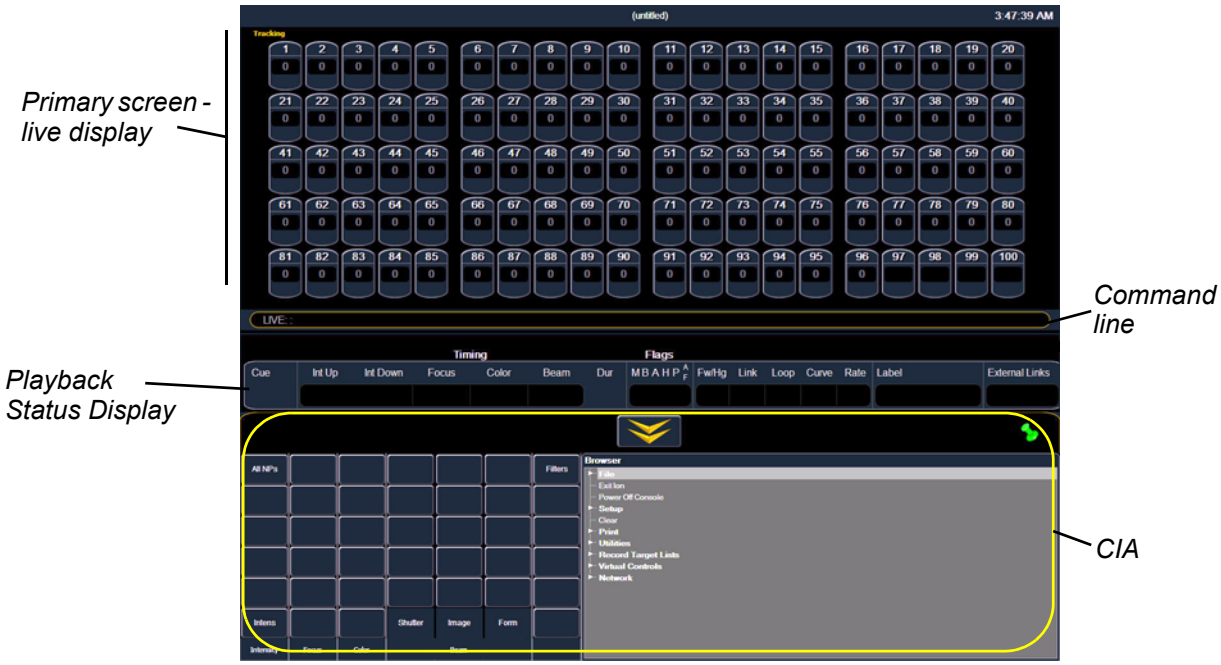
When you first start up Ion, you will immediately enter the Ion software environment. A welcome window will greet you with a {Let's Begin} button visible on the screen. Use your mouse to click on **{Let's Begin}** or you can press the **[Enter]** key.

Since Ion can be set up with one or two monitors, what you will first see depends partly upon the number of monitors you are using.

Single Monitor Configuration

When using a single monitor, the top half of the initial display screen becomes the primary viewing area for displayed information. Ion will first open with the live summary display on the top (primary) half of the screen and the CIA on the bottom half of the screen.

When the CIA is open, one line of the playback status display is visible above the double arrows. You can view more of the playback status display by collapsing the CIA (see *Collapse/Expand the CIA, page 27*).

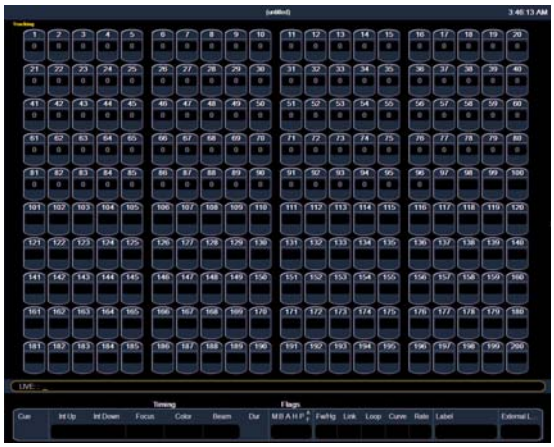


Initial View - Primary/CIA

You can use the **[Swap]** key to change the view of the display. Multiple presses of [Swap] will yield the following responses:

- **First press - *Expanded View*** - expands the top (primary) portion of the display to the full screen. This essentially hides the CIA from view.
- **Second press - *Playback Status View*** - exposes the CIA again and switches the primary area to the playback status display.
- **Third press - *Primary/CIA View*** - returns the screen to the original primary display with the CIA exposed.

As you open other displays later while programming, they will open in place of the live summary view. The playback status display is always the display visible by pressing [Swap].

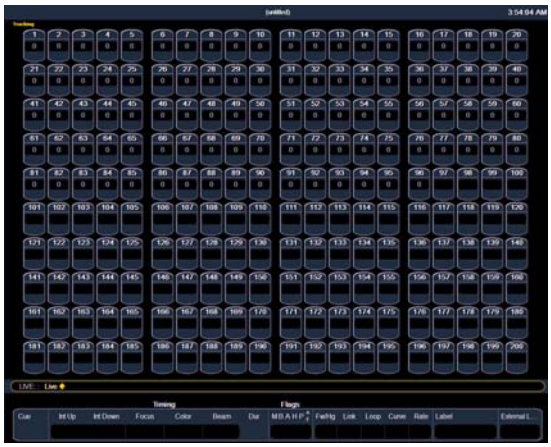


Expanded View
Live Display

Playback Status View

Dual Monitor Configuration

When two monitors are used, one monitor will show the playback status display as well as the CIA and the other monitor becomes the primary area for displayed information. In this dual configuration, Ion will first open with the live summary display open on the primary monitor and the playback status and CIA visible on the other monitor.



Dual Monitor
Primary Display (Live)

Dual Monitor
Playback Status Display

You can press the **[Expand]** key to expand the primary display onto the secondary display.

Dual Monitor
Primary Display (expanded)

To return to the original view, press **[Expand]** again.

The Central Information Area (CIA)

The Central Information Area (CIA) is displayed on the lower portion of the screen. By default, the CIA consists of two primary areas: the parameter display, and the browser.

Parameter Display

This display shows the parameters available for patched channels. It is also where you can select which parameters to view in live or blind. The parameter display will dynamically change depending on the channel (fixture) selected and its applicable parameters.

Browser

The browser is the interface for numerous functions including saving a show, loading a show, changing settings, viewing record target lists, opening displays and many other functions.

Collapse/Expand the CIA

It is possible to collapse the CIA from view. To do this, you can click the **double arrow** icon centered above the CIA. The CIA will collapse from view, exposing a larger viewing area of whatever display is visible above the CIA. The double arrows will move to the bottom of the screen.

To expand the CIA into view again, click the **double arrow** at the bottom of the screen. The CIA will reopen.

Lock the CIA

You can lock the CIA in place to prevent it from being collapsed.

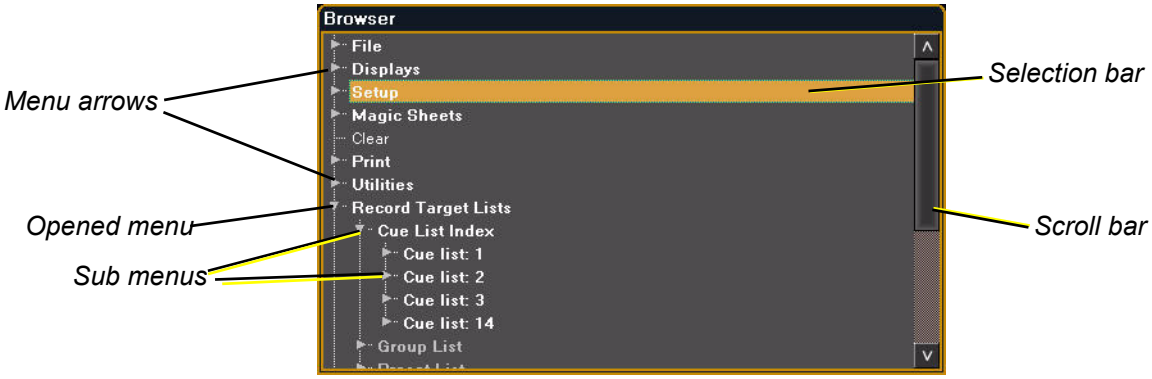
To lock the CIA, click on the **push pin** above the browser. The double arrow above the CIA will disappear and the push pin will “sink” into the CIA to hold it in place.

To unlock the CIA, click the sunken push pin again and the double arrows will reappear.

Using the Browser

To use the browser, you must first draw focus to it by clicking anywhere in the browser area of the CIA or by pressing the **[Displays]** key.

When focus is on the browser, the window border highlights in gold. The scroll lock LED illuminates red and the paging keys will now control selection in the browser.



- Use the page arrow keys to move the selection bar up and down the list.
- When the bar highlights the desired menu, press **[Page ▶]** to open the menu.
- Continue pressing **[Page ▶]** to open submenus.
- Scroll to the item you wish to open using **[Page ▲]** or **[Page ▼]** and then press **[Select]**. You may also click the item you wish to open and then press **[Select]**.
- If you wish to close a submenu scroll to that item and press **[Page ◀]**.
- To draw focus to the browser at any time, press the **[Displays]** key.

Virtual Keyboard

It is possible to open a virtual keyboard in the CIA which mimics the hard keys found on the actual Ion keypad. This virtual keyboard is accessible from the browser.

The browser path to the virtual keyboard is **Browser>Virtual Controls>Virtual Keyboard.**

Following this path will open the virtual keyboard, giving you click access to the Ion hardkeys on the CIA. The browser and parameter display will be hidden from view while the virtual keyboard is open. To close the virtual keyboard, press the **[Displays]** button, to the right of the CIA.

Direct Selects

Ion gives you the option of opening direct select modules on the monitors.

To open the direct selects on a monitor:

Step 1: Go to **Browser>Virtual Controls>5 x 10 Direct Select Module**. A window will open in the CIA displaying your monitor placement options for the module.

Step 2: Click the placement option in the CIA in which you want the module to appear.

To close the direct selects on a monitor:

Step 1: Go to **Browser>Virtual Controls>Close Module**. The placement screen will appear again in the CIA.

Step 2: Click the placement of the module you wish to close. The module will be removed.

For information on populating direct selects see *Organizing the Direct Selects* below.

Virtual Faders

If you prefer to have faders available to you, the monitors can be populated with virtual fader modules.

To open virtual faders on a monitor:

Step 1: Go to **Browser>Virtual Controls>Slider Module**. A window will open in the CIA displaying your monitor placement options for the module.

Step 2: Click the placement option in the CIA in which you want the module to appear.

To close the virtual faders on a monitor:

Step 1: Go to **Browser>Virtual Controls>Close Module**. The placement screen will appear again in the CIA.

Step 2: Click the placement of the module you wish to close. The module will be removed.

Organizing the Direct Selects

You have considerable flexibility in how you organize the direct selects. They may be arranged to display one of several different types of data.

To choose which information to view:

Step 1: Click the **{Select}** button for any block of direct selects. You will be offered the following choices to view: Channels, Groups, Intensity Palettes, Focus Palettes, Color Palettes, Beam Palettes, Presets, Macros, and Effects.

Step 2: Click the button for the data you wish to view and the associated direct selects will populate with any recorded information of that type. If there is no recorded information of that type the block of buttons will remain empty but will populate with data of that type as associated record targets are stored.

Step 3: You may also click **{Select}** again, without choosing any option, to return to the previous state.

You can increase or decrease the size of any set of direct selects by pressing the **{20/50}** button, which will change the display between one set of 50 buttons and two sets of 20 buttons.

You may also press the {**Expand}** button (located beneath the {Select} button) to expand a set of direct selects to full screen. Press {**Expand}** again to return the set to its previous size and mapping.

Using Direct Selects

Direct selects allow access to a number of controls, including a channel select display. If there are more items than can be viewed at once, you may view subsequent pages by using the page buttons ({Page ▲}, {Page ▼}) by the direct selects.

Selecting Channels with Direct Selects

Channel direct selects are highlighted when selected. Channel selection is generally an additive process, if channels 1-5 are selected, pressing **{Channel 6}** adds channel 6 to the selection, leaving channels 1-5 also selected. Pressing **{Channel 6}** again will deselect the channel.

It is possible to double hit a channel button. This selects that channel and deselects any previously selected channels.

- **{Channel 1}** - adds channel 1 to currently selected channels, if not currently selected.
- **{Channel 1} {Channel 10}** - adds channels 1 and 10 to currently selected channels.
- **{Channel 1} {Channel 1}** - selects channel 1, deselects all other channels.
- **{Page ▼}** - pages direct selects down by one page.
- **{Page ▲}** - pages direct selects up by one page.

Display Control and Navigation

Opening and Closing Displays

Displays can be opened and closed in different ways, depending on the display. Many displays are accessible from the browser, while other displays are accessible from the LCD softkeys. The blind displays of record targets (also called “lists”) can be quickly accessed by double pressing the record target button (for example, [Preset] [Preset] opens the preset list).

From the browser

Open and navigate the browser as described in *Using the Browser, page 28*. When you open a new display (such as the cue list index, group list, or patch), it will open on the primary display. If the display does not open to a monitor (such as “setup” or the browser) it will open in the CIA.

Again, any time you wish to return to the browser, simply press **[Displays]** and then **{Browser}** and it will be made available.

From the hardkeys

You can open list views of any record target by double-pressing the key for the desired record target.

From the LCD softkeys

To open any displays accessible from the softkeys, press **[Displays]**. The softkeys will repaint to display:

- Effect Status
- Color Picker
- Patch
- Setup
- Curves
- Browser

Any of these softkeys will open the associated display with a single press.

Closing Displays

To close any display, you can

- press the **[Displays]** key again to open a different display.
- select the display by clicking on the screen. Then press **[Escape]** to close it. The screen will return to its default display.
- Press **[Live]** or **[Blind]** to replace the display with the live/blind view.

To close a display in the CIA, press the **[Displays]** key and the browser will reappear.

Swap Displays

When using two monitors, you can swap displays between monitors by pressing the **[Swap]** key. Press it again to return to the original configuration.

Scrolling within a Display

By default the page keys will advance/retreat a display by one page per press. However, to scroll through displays you may press the **[Scroll Lock]** key on the keypad. The LED on the button illuminates red when in scroll lock mode.

Scroll lock is a toggle state. When scroll lock is first pressed:

- **[Page ▼]** - scrolls table, spreadsheet and channel views down,
- **[Page ▲]** - scrolls table, spreadsheet and channel views up,
- **[Page ▶]** - scrolls table and spreadsheet views right,
- **[Page ◀]** - scrolls table and spreadsheet views left.

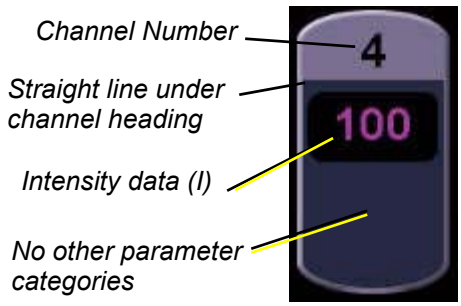
Graphical User Interface (GUI) Display Conventions

Ion relies on many traditional ETC indicators which you may be familiar with, as well as some new ones. This section identifies the graphical and colorful conventions used in Ion to indicate conditions to you.

Indicators in the live/blind display

This is the live/blind summary view.

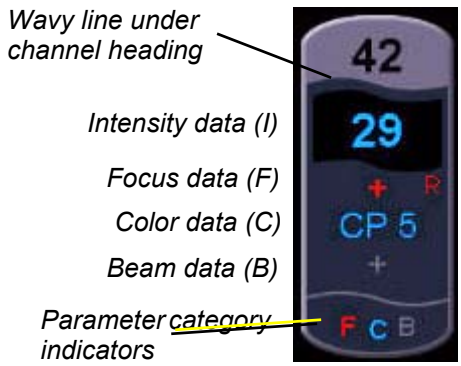
Note: *The color and text conventions described below apply regardless of the format of live/blind being used (see Using [Format], page 38).*



Conventionals

Most of the channels in the above image are conventional channels (intensity is the only available parameter).

Conventionals have a straight line beneath the channel number. They also display only the top field, intensity, as no other parameters are available on a conventional channel.



Moving Lights or Multi-parameter Devices

Several channels in the image are moving lights (possessing more parameters than only intensity).

Moving light channels have a wavy line beneath the channel number as well as parameter category indicators at the bottom of the channel.

This view also has additional data fields beneath intensity (F, C, B). This information can be suppressed by pressing and holding **[Data]** and any parameter category (Focus, Color, or Beam) button to the right of the LCD. Doing so will leave only the intensity field and FCB indicators at the bottom of the channel.

Color indicators

Ion uses color to indicate the selection state and information about channel or parameter levels.

Channel numbers/channel headers

Unselected *Selected*

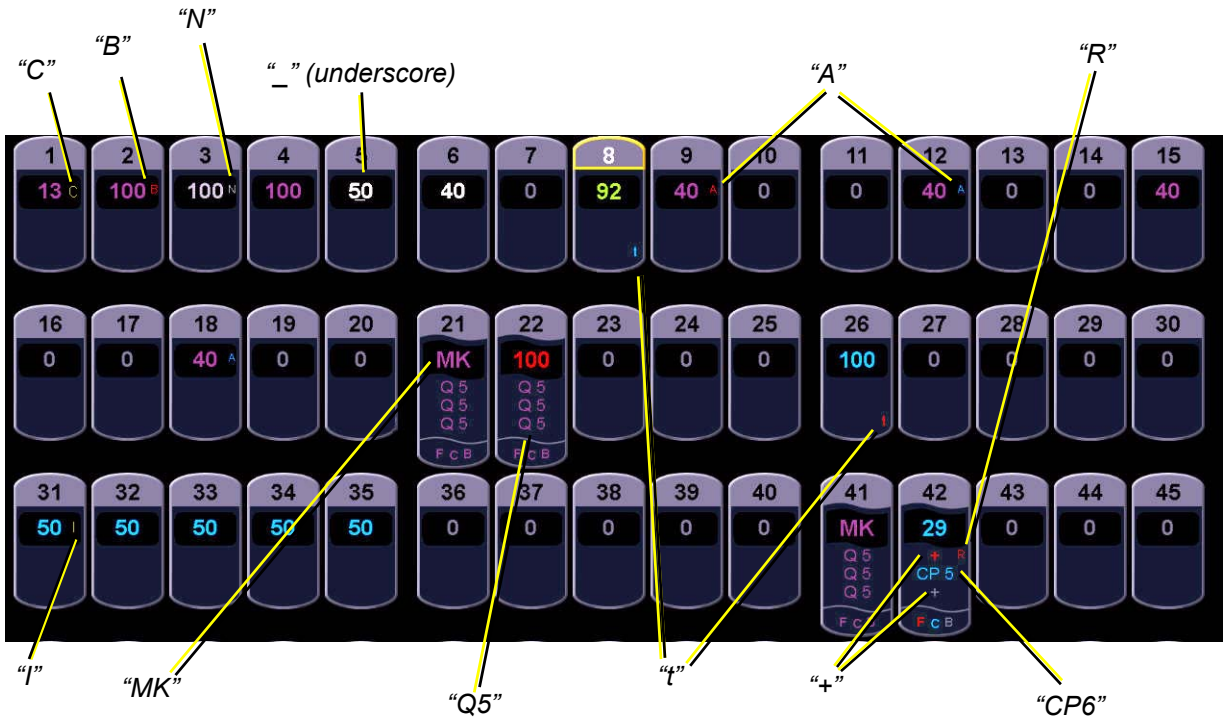
- **Black** . . . . . Unselected channel number.
- **White** . . . . . Selected channel number or channel is parked.
- **Gray header** . . . . . Unselected channel header.
- **Gold outline** . . . . . Selected channel header.

Channel or parameter levels

- **Red**. . . . . Manual data (any data that has been set but not yet stored to an active cue).
- **Blue** . . . . . The intensity value is higher than in the previous cue. Non-intensity parameters (NPs) are in blue when any move instruction has occurred.
- **Green** . . . . . The intensity value is lower than in the previous cue. Also used in reference marking to indicate a channel has just marked.
- **Magenta** . . . . . The recorded value is tracked, unchanged from a previous cue.
- **White** . . . . . The value is blocked.
- **Gray** . . . . . Default or the value is a null value (from either {Make Null} or a filter). When nulled, a gray “n” appears next to the value.

Text Indicators in live/blind

Please note examples of text indicators in the following graphic:



Color conventions listed above apply to text indicators as well. Therefore red indicates a manual value that must be stored.

- **_** . . . . . Underlined value (white) indicates a system-applied block (also called an auto-block).
- **+** . . . . . Found in place of parameter data in summary view. Indicates that not all parameters in that category are at the same value. This indicator is found only in the summary view or in table views when the parameters are collapsed into a category view only.
- **A** . . . . . Indicates the channel or parameter is asserted.
- **B** . . . . . Always red. Indicates the channel or parameter is manually blocked (not an autoblock). This block must be stored.
- **C** . . . . . Captured Channel
- **I** . . . . . Channel is controlled by an inhibitive submaster
- **IP, CP, FP, BP** . . . . . Indicates that the value is referenced to a palette (Intensity, Color, Focus, or Beam). This text is followed by a number, indicating which palette is being referenced. This can be substituted with the palette label if the "Show Reference Label" setting is activated (see *Show Reference Labels, page 88*).

- **MK** . . . . . Indicates the channel is marked for a later cue. The cue number is indicated in the other categories (see “Q” below).
- **N**. . . . . Indicates the value is null (from either {Make Null} or a filter).
- **Pr** (not shown) . . . . . Indicates that the value is referenced to a preset. This text is followed by a number, indicating which preset is being referenced. The preset label may also be shown if this setting is enabled (see *Show Reference Labels, page 88*).
- **Q**. . . . . Found in the non-intensity categories of a marked channel. The “Q” is followed by a number indicating which cue the mark is in preparation for.
- **R**. . . . . Indicates a manual reference override. Manual changes have been made that override a previously stored reference (such as to a palette or preset). Once recorded, the reference will be broken. If updated, the referenced target will be updated as well.
- **t** . . . . . The channel has discrete (parameter/category-specific) timing.

[Data] Key

Pressing and holding [Data] allows you to view the values behind any referenced or marked data. [Data] exposes the next lower reference level. So if you view a palette reference and press [Data], the absolute data will be displayed instead. If you are viewing a preset, absolute or palette data will be displayed, depending on what is contained in the preset.

[Time] Key

Pressing and holding [Time] allows you to view discrete timing data behind any channel. [Time] exposes channel or parameter specific timing for any channels in the current cue. If no discrete timing is recorded for a channel or parameter, a “--” is displayed, meaning that the channel or parameter follows the timing specified for the cue. If multiple values are shown, the first value is the delay, the second value is the timing transition.

Using Flexichannel

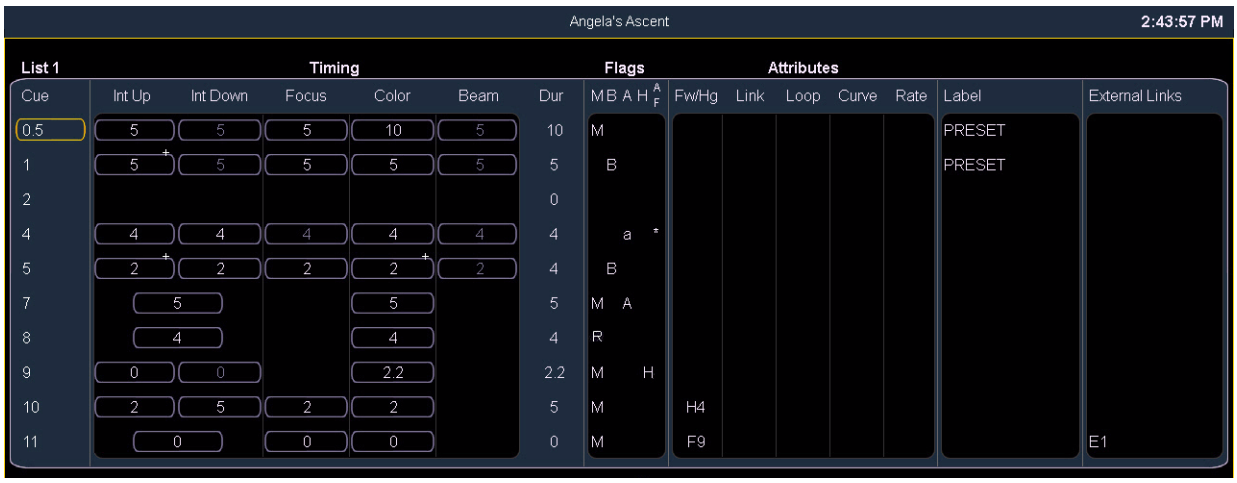
Flexichannel (use of the [Flexi] key) allows you to view only channels meeting a certain criteria in the live/blind display, therefore removing unwanted data from view. Flexichannel has several available states which include allowing you to view only:

- All channels
- All patched channels
- All show channels (any stored data in the show file)
- Active channels
- Moved channels
- Selected channels

In flexi mode, any selected channels (including the last channel selection) are always included in the view.

To change flexi modes in the live/blind display, press **[Flexi]** to cycle through the views listed above.

Indicators in the playback status display



Color indicators

- Gold . . . . . Any item (cue, list, page) highlighted in gold indicates “current”. Outlined in gold indicates “selected”.
- Red. . . . . Cue fade is in progress (cue list area)

Text indicators

- + ... Indicates that there is discrete timing within the associated cue.
- * . . . . . Indicates the cue has an allfade command.
- A or a . . . . . Indicates an asserted cue. “A” indicates the entire cue is asserted. “a” indicates a channel or parameter assert only.
- B or b . . . . . Indicates a blocked cue. “B” indicates the entire cue is blocked. “b” indicates a channel or parameter block only.
- F9 (see in cue 11) . . Indicates a follow time associated with the cue (in this case, 9seconds).
- H (see in cue 9) . . . . Indicates the cue has a hold flag.
- H4 (see in cue 10) . . Indicates a hang time associated with the cue (in this case 4 seconds).
- L2 (on fader pg. 8) . . Indicates a cue list number (in this case, list 2).
- M or m . . . . . Indicates a marked cue. “M” indicates an AutoMark or a reference mark that is used by a subsequent cue. “m” indicates a reference mark that is currently unused by any subsequent cue (see *Using Mark, page 159*).
- R (see in cue 8) . . . . Indicates the source cue which refers back to an earlier mark (see *Referenced Marks, page 161*).
- S2 (on fader pg. 1) . . Indicates submaster number (in this case, sub 1).

Using [Format]

Some displays have multiple formats. When the display is first opened, it opens in its default view. The default view for Live/Blind is channel summary, with only intensity displayed. When the default format has been changed, those new settings will be used whenever the display is changed back to that format.

Live and Blind share formatting. When you change from one format to another format, you are always working with the same format until you change it. The exception to this is spreadsheet, which is only available in blind. If you are working in blind spreadsheet, when you return to live you will be working with the table or summary view, based on which one you were last using.

Summary View

The summary view displays the largest number of channels of any of the formats. Below you can see channels 1-60 are shown. This format is best used to see large numbers of channels' intensity data or parameter category data. Individual parameters are not visible in this view

By default, the summary view shows only intensity, with FCB (Focus, Color, Beam) data suppressed. FCB icons will appear at the bottom of the channel area for channels that have those parameters patched to them.

You may include focus, color, or beam data in the summary view by holding down the **[Data]** key and pressing any parameter category key (located to the right of the LCD). This displays all categories.

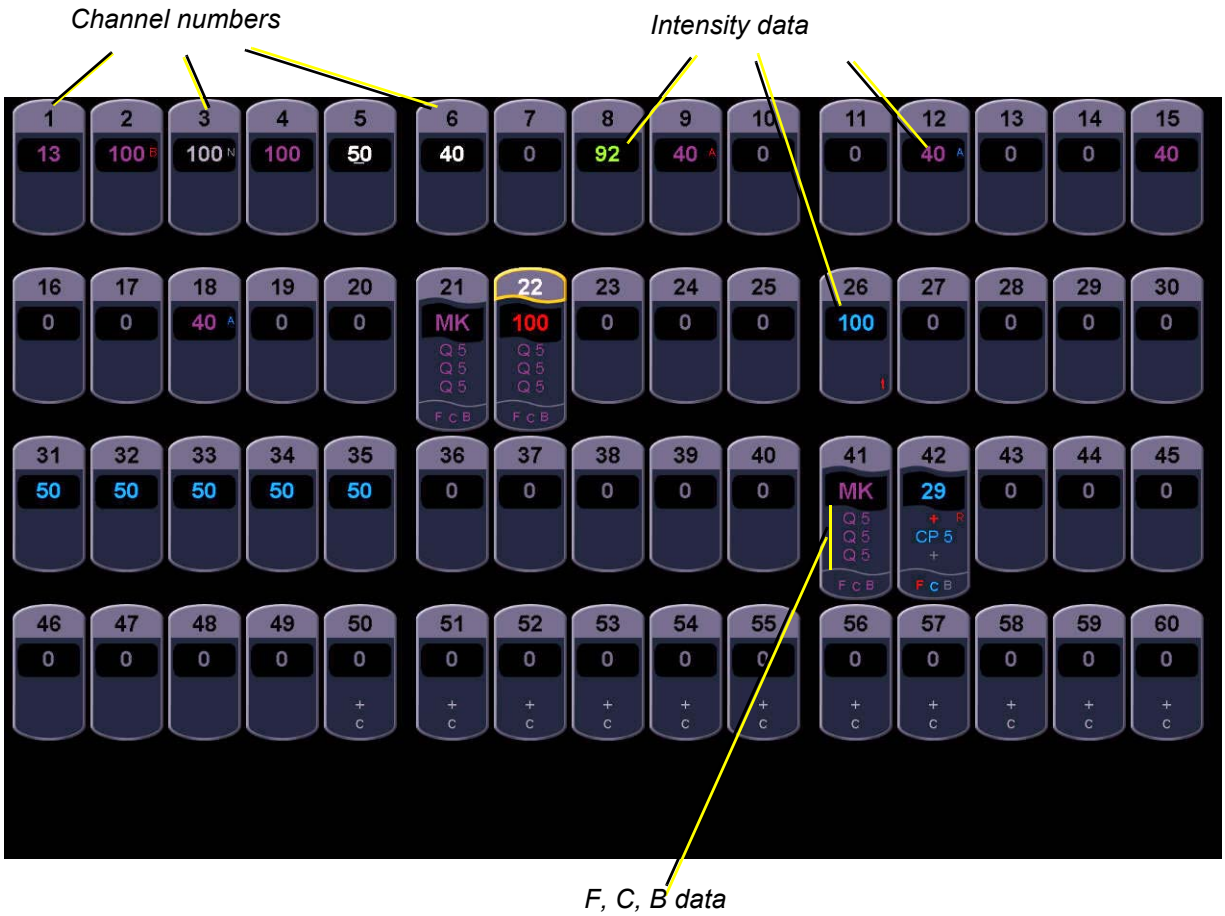


Table View

Table view is available in live or blind. Unlike summary view, table view displays the fixture type associated with channels and details about each channel's category *and* parameter levels.

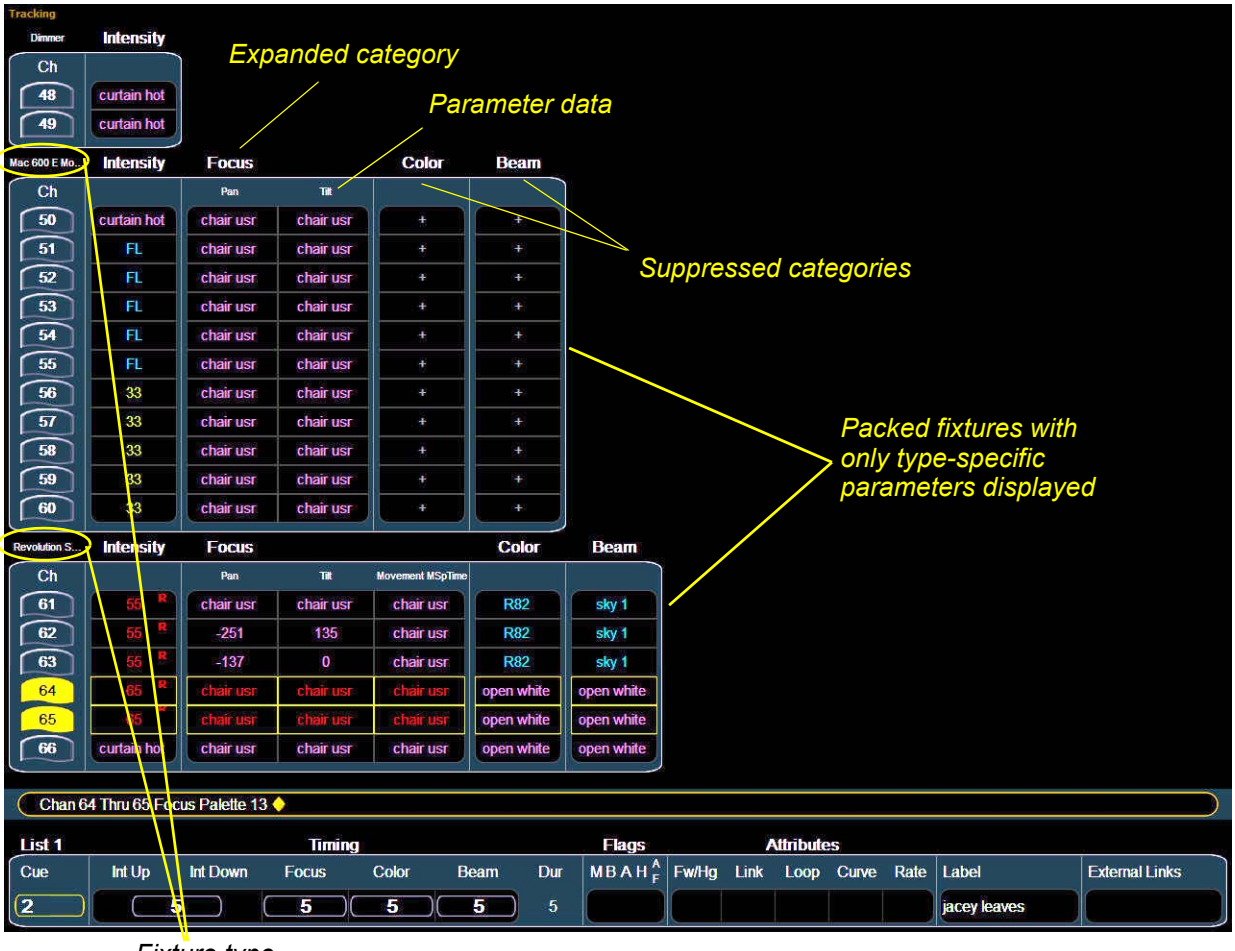
In live, table view displays all active channel data being output from Ion. In blind, it will display all data for a single record target (cue, preset, palette) depending on what is viewed. It shows a smaller range of channels than summary view but includes specific parameter data for each channel. Parameter categories (I, F, C, B) are always visible in this format, summarizing all parameters in the category. The categories can be expanded as needed to provide a more detailed view of individual parameters.

To hide or reveal parameters of a certain category from view you may press and hold **[Data]** and then press the parameter category button of the parameters you wish to affect. Parameters for that category will be suppressed or expanded, depending on the current view. You cannot hide a category from view.

To hide or reveal only certain parameters, press and hold **[Data]** and then select the parameter buttons of the appropriate parameters in the CIA. The parameters will be displayed or suppressed depending on the current view.

Notice that when you hold down the [Data] button, the buttons of parameters that are currently selected for viewing will be highlighted in the CIA.

In the table, a slight space is provided between fixture types, giving a clear delineation between them. The name of the fixture type is displayed at the top of the section for that fixture.



Live Table View

Spreadsheet (Blind Only)

Spreadsheet format is available only in blind mode. It is useful for viewing channel data and data trends for multiple cues, submasters, palettes, or presets at one time. Cues and other record targets are displayed on the vertical axis and channel or parameter data is visible on the horizontal axis.

Since this is a blind-only view, changes made in this view are immediate and do not require a record or update.

As with table view, spreadsheet format allows you to choose exactly which parameters you want to view. Parameters can be expanded/suppressed by holding **[Data]** and pressing the desired parameter buttons in the CIA. Category data is not available in spreadsheet, but you may hide all parameters of a specific category by holding **[Data]** and pressing the desired category button to the right of the LCD.

Encoders

The encoders are one of two ways to control the non-intensity parameters (NPs) of moving lights. The four encoders are identified by the encoder LCD window, just beneath the encoder wheels.

Encoder Navigation

Use the encoder page buttons (located to the upper right of the encoder LCD) to choose which parameters are mapped to the encoders. A channel with relevant parameters must be selected for any parameters to appear in the parameter LCD. There are five readily usable buttons: [Focus], [Color], [Form], [Image], and [Shutter]. Pressing any of these will change the parameters controlled by the encoders.

Some fixtures have more parameters than can be displayed on one encoder page. The number of pages for each category is displayed at the right side of the encoder screen. To view the other pages, simply press the [Color], [Shutter], [Image], or [Form] button to advance the pages.

Using Softkeys

Some of the features and displays in Ion are accessible from the softkeys, which are located in the bottom right area of the LCD.

Remember the use of the [Displays] button to the right of the LCD. This button offers softkeys that access the following displays:

- Effect Status
- Color Picker
- Patch
- Setup
- Curves
- Browser

Each of these displays offers its own specific softkeys of relevance.

Context Sensitive Softkeys

Softkeys are context sensitive and will change depending on a number of factors including: the active display, the current command in the command line, the active record target and so on. Ion always repaints the softkeys to coincide with your current action.

To get the full use of features on your Ion system, be sure to familiarize yourself with the softkeys that become available as you program your show.

Changing Softkey Pages

When there are more relative softkeys than the six available softkey buttons, the LED in the [More SK] button will light. Press **[More SK]** to view the additional softkeys.

Chapter 4

Managing Show Files

This chapter explains how to create, open, and save your show files. Each of these operations are accomplished through the browser area in the CIA.

This chapter contains the following sections:

- ***Create a New Show File*** 44
- ***Open an Existing Show File*** 45
- ***Saving an Existing Show File*** 47
- ***Using Save As*** 48
- ***Importing Show Files*** 49
- ***Exporting a Show File*** 50
- ***Deleting a File*** 51

Create a New Show File

To create a new show file, navigate within the browser to: File> New> and press **[Select]**.

You will be prompted for confirmation that you want to reset the system. Press **{OK}** to confirm or **{Cancel}** to discontinue the operation.

Open an Existing Show File

To open an existing Ion show file, navigate within the browser to: File> Open> and press **[Select]**.

Ion provides you with multiple locations to retrieve an Ion show file (.esf) including:

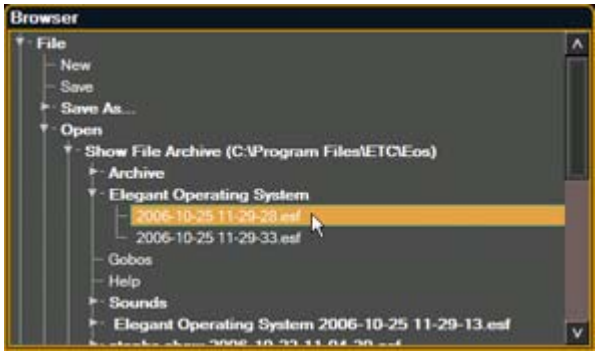
- Show File Archive - This is the default storage location for show files when a show file is created and saved. Folders are automatically created to store older versions of a show file. This allows you the ability to open the latest version or an earlier version of a show file if desired.
- File server - if one is connected. When there is no file server connected, it will not display in the browser.
- USB (F:) device - When a USB device is connected and an Ion show file (.esf) is available on the device, you will notice the USB is displayed in white text and is expandable. When the USB device is connected and no Ion show file is loaded on the device, you will notice the USB (F:) is displayed in a grey color and is not selectable.
- CD (E:) drive - When a CD is loaded and an Ion show file (.esf) is available on the CD, you will notice the CD is displayed in white text and is expandable. When the CD is loaded and there is no Ion show file (.esf) on the CD, you will notice the CD (E:) is displayed in grey and is not selectable.

Open the desired location:

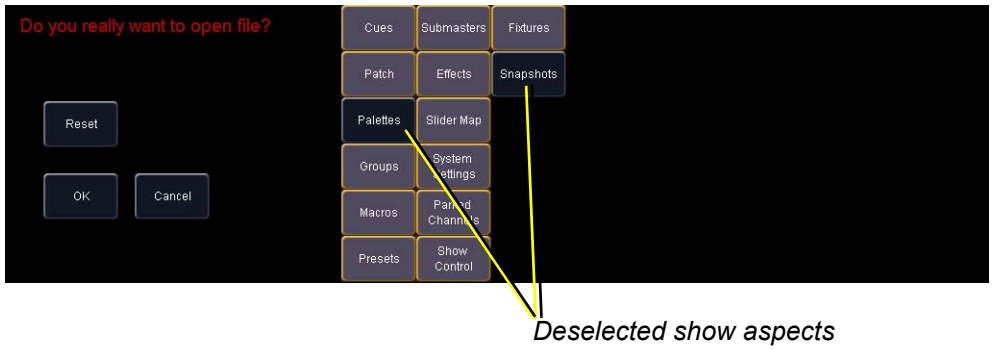
- To open a show file from the Show File Archive, navigate within the browser to: File> Open> Show File Archive and press **[Select]**.
- To open a show file from the file server, navigate within the browser to: File > Open> File Server> and press **[Select]**.
- To open a show file from a USB device, navigate within the browser to: File> Open> USB (F:) and press **[Select]**.
- To open a show file from a CD, navigate within the browser to: File> Open> CD (E:) and press **[Select]**.

Select the specific show file

- Navigate within the specified storage location and select the show file you wish to open, press **[Select]**.
- If the selected show has multiple time stamps, navigate to the desired revision and press **[Select]**.



This will open the partial show loading screen in the CIA.



Deselected show aspects

From this screen you can select which aspects of the show file you wish to load. The buttons at the center of the CIA represent all of the show aspects that you can choose to load. By default all aspects are selected (gray) and will be loaded. To withhold any show aspects from loading, simply deselect them in the CIA by clicking the respective button.

To reselect all show aspects, click the **{Reset}** button and all buttons will return to gray (selected). To stop the show load process, click the **{Cancel}** button.

When you have selected or deselected all of the show aspects you require, click **{OK}**.

Ion loads the selected show to the console.

Note: *On a partial show open, if any record targets are not opened, any existing data of that type will remain stored on the console.*

Saving an Existing Show File

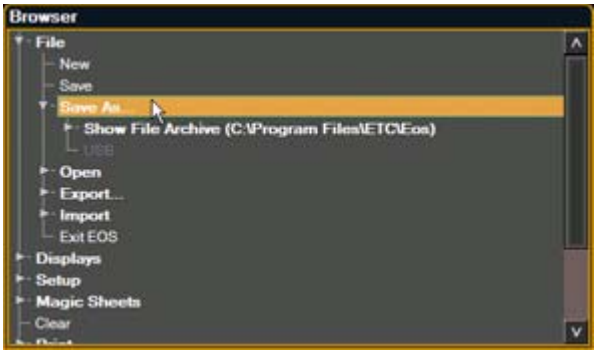
To save an existing Ion show file, navigate within the browser to: File> Save> and press **[Select]**.

The Show File Archive is the default storage location for show files when they are saved. The new time stamp located beneath the show file name on the CIA indicates that the show file has been saved.

All previous saves are stored in the Show File Archive with the time stamp following the file name.

Using Save As

To save an existing Ion show file to a different location or with a different name, navigate within the browser to: File> Save As> and press **[Select]**.



Ion provides you with three locations to save an Ion show file (.esf) including the Show File Archive, the File Server (if connected) or a USB device (if connected).

Navigate to the desired storage location and press **[Select]**. When using “Save As” to save the show file to a specific location, the alphanumeric keypad will display on the CIA. Name the show file and press **[Enter]**. The show file will be saved in the specified location with the show file name you entered with a time stamp suffix.

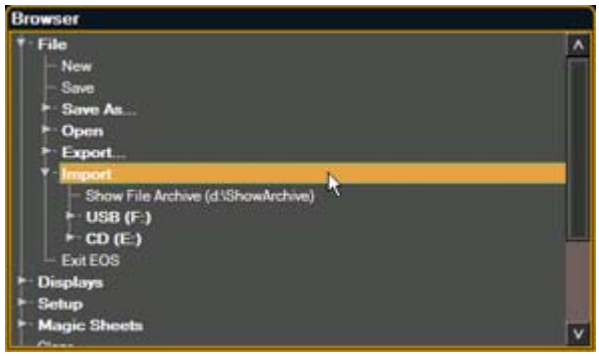
Importing Show Files

Ion supports the import of standard USITT ASCII show files.

Note: *Ion supports ASCII show file import from a number of other control consoles, including the Obsession, Expression and Emphasis product lines, as well as the Strand 500 Series. Please note that all show files must be saved in an ASCII format prior to importing them into Ion.*

You have the option of importing standard USITT ASCII show files (.asc) from the Show File Archive, a File Server (if connected), a USB device or a CD.

To import an ASCII show file, navigate within the browser to: File> Import> and press **[Select]**.



Navigate to the desired storage location and press **[Select]**. When using import, Ion displays only the available ASCII (.asc) files. Navigate to the specific ASCII file and press **[Select]**.

Exporting a Show File

Export your Ion show file to a standard USITT ASCII show file using the export feature.

To export your Ion show file in ASCII format, navigate within the browser to: File> Export> and press **[Select]**

You have the option of exporting your show file in ASCII format to the Show File Archive, to a File Server (if connected) or to a USB device.

Navigate to the desired storage location and press **[Select]**. The alphanumeric keypad will display on the CIA. Name the show file and press **[Enter]**. The file will be saved in the specified location with the file name you entered with a ".asc" file extension.

Deleting a File

Ion provides you with the ability to delete show files and ASCII files from the Show File Archive and the File Server from within the browser.

To Delete an Ion Show File (.esf)

Navigate within the browser to: File> Open and press **[Select]**. Navigate to the desired show file and press **[Delete]**. Press **[Enter]** to confirm or any other key to abort the deletion process.

To Delete an ASCII Show File (.asc)

Navigate within the browser to: File> Import and press **[Select]**. Navigate to the desired show file and press **[Delete]**. Press **[Enter]** to confirm or any other key to abort the deletion process.

Chapter 5

Patch

Patching is how you assign channel numbers to dimmers (also known as address outputs). The “Patch” is where patching data is stored and can be view using the patch display. Once a channel is patched to an output, and the output is connected to a device (for example a dimmer, moving light, or accessory), the channel will then control that device.

This chapter contains the following sections:

- ***Displays*** 55
- ***Create and Edit Patch*** 57
- ***Patching a Dimmer*** 58
- ***Patching Moving Lights*** 60
- ***Display Pages in Patch*** 62
- ***Using the Scroller/Wheel Picker and Editor*** 68
- ***Calibrating a Scroller***. 72
- ***Changing the Patch View*** 56
- ***Keywords*** 73
- ***Deleting Channels*** 73
- ***Fixture Creator*** 74
- ***Update Library*** 78

About Patch

Ion treats fixtures and channels as one and the same, meaning each fixture is assigned a single control channel number. Individual parameters of that fixture, such as intensity, pan, tilt, zoom, or iris are also associated with that same channel number but as additional lines of channel information, *not* as separate channels.

You are required to enter only the simplest data to patch a device and begin programming your show, such as the channel number, the device type (if needed), and address. Although, when you provide more information and detail in the patch, you will have more detailed control and improved function during operation.

One or more devices may be patched to a single channel. For example you may want to patch a group of dimmers to the same channel. In addition you may patch multiple devices to the same channel for building a compound or accessorized fixtures. For example a Source Four® with a color scroller and a gobo changer may be patched to a single channel. This is referred to as a compound channel.

Ion also allows you to create and edit the patch from the encoders and LCD. For details on this method, see *Patch Channels from the Encoder LCD, page 67*.

When you open a new show file, Ion defaults to creating a 1-to-1 patch. This means that the patch will automatically have channel 1 patched to output 1, channel 2 to output 2, and so on up to the maximum channel count of your console.

Displays

To begin patching your show, you must first open the patch display. You may open the patch display from the LCD softkeys or from the browser menu.

To open the patch display from the CIA:

Step 1: Press the **[Displays]** button located to the right of the LCD.
Step 2: Select the **{Patch}** softkey.

To open the patch display from the browser:

Step 1: Bring focus to the browser by pressing **[Displays]**. Notice the browser is highlighted with a gold box to indicate it is selected.
Step 2: Expand the **Displays** submenu.
Step 3: Select **Patch** either by double-clicking “Patch” or move the highlight to “Patch” and press **[Select]**.

The patch display will open on the primary display and the CIA will display the patch controls.

Channel View

By default, the patch display lists channels on the X axis and device attributes on the Y axis. In this view the channels are sorted numerically with the DMX address in the second column. In the “patch by channel” display, the command line entry defaults to selecting channels.

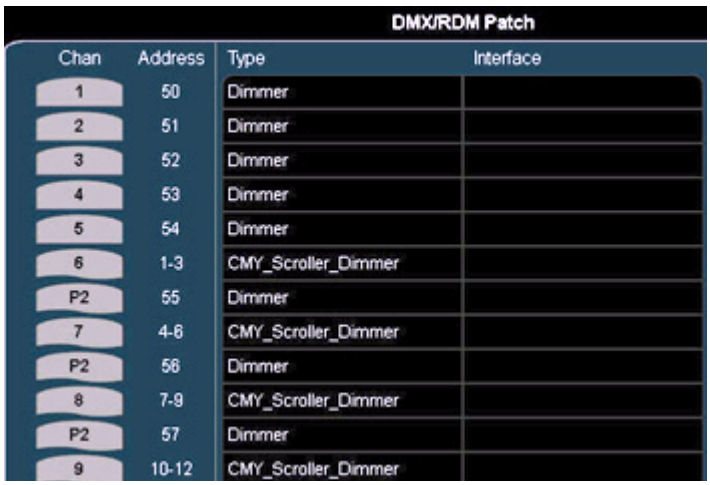
Address View

You can change the patch display to sort by DMX address by pressing **[Format]**. The channel number is now indicated in the second column and the command line changes its default entry to “Address.” To specify a channel in this mode, use the {Channel} field shown in the CIA or press **[At]** after the address entry.

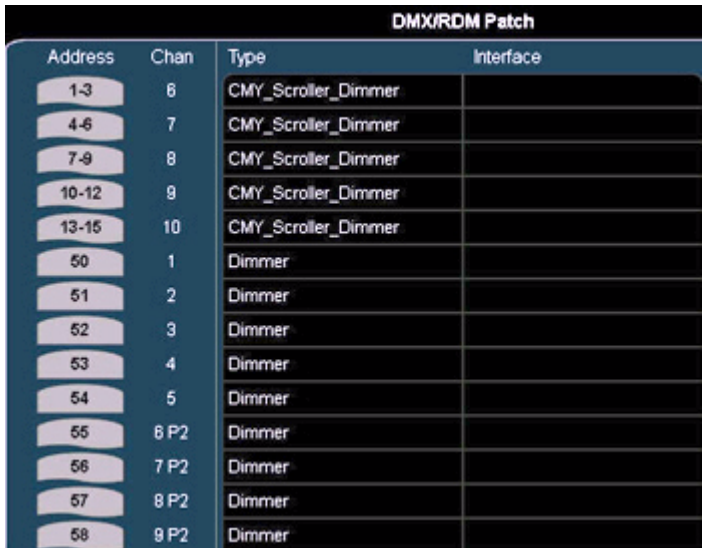
Changing the Patch View

By default, patch is displayed in a sequential channel view. While in the channel patch view, any numeric entry from the keypad is assumed to be a channel.

Note: *It is recommended that you use the patch by channel display when working with moving lights or other multi-parameter devices.*



You may change this to a sequential address view by pressing the **[Format]** button. While in address patch view, any numeric entry from the keypad is assumed to be an output address.



As it is possible to patch by either output address or port/offset, pressing the **[Data]** key will toggle the display to show the alternate output information.

Create and Edit Patch

Select Channel, Set Device Type and Output Address

Each field identified in the patch display is also displayed in the CIA as a button. You can select the fields using the page arrow keys (with “scroll lock” engaged) and edit them using the control keypad or from the CIA buttons.

Selecting Channels

You may select channels for patching and editing using the keypad or direct selects.

Keypad

Channels may be selected in all of the same methods as defined in *Selecting Channels, page 92*. When channels are selected, the patch display will show those channels and highlighted in gold. After selecting the channel or group of channels, you may set each of the attributes beginning with the device type, followed by the starting address. *See “{Patch} Display and Settings” on page 62.*

Note: *When patching conventional dimmers, it is not necessary to specify the device type. “Dimmer” is assumed.*

Status in the Patch Display

The first column in the patch display will advise you when a channel requires your attention.

- “!” is displayed next to a channel number when there is a problem with the patch or to indicate there is an error.

Patching a Dimmer

Tutorial

Step 1: To patch a dimmer you must first open the patch display. You may open the patch display from the browser or by pressing **[Displays]>{Patch}**.

Step 2: Enter a channel number from the control keypad.

- When typing any number from the control keypad, and patch is in default channel mode, channel is assumed and is placed on the command line.

Note: *Alternatively, when patch is in address mode, DMX address is assumed and is placed on the command line. Channel mode and address mode are toggled using the [Format] key in the patch display.*

- You can also use the [+], [-] and [Thru] keys to make your channel selection to patch more than one dimmer at once.
- **[1] [Thru] [5] [0] [At] [1] [Enter]** patches channels 1 through 50 to addresses 1 through 50 sequentially.

Step 3: Enter the DMX address or addresses.

- You may press **[At]** and enter the DMX address using the control keypad. The DMX address may be entered in standard format ([1] [0] [2] [5] [Enter]) or by using the port and offset value ([3] [/] [1] [Enter]).
- Multiple addresses may be patched to a channel in a single command. For example, **[1] [0] [At] [1] [0] [5] [+] [2] [0] [5] [+] [3] [0] [5] [Enter]** would patch channel 10 to address 105, 205, and 305. When more than one device is patched to a channel, Ion automatically creates parts for each device. This is used if you need to access an address directly in the patch-by-channel display.

Step 4: By default, Ion outputs both EDMX and ACN for each address. In a very large system, it may be useful to specify the address's device interface as EDMX (net 2) or ACN (net 3) to reduce network traffic. Generally, this step is not required. To select a device interface, click **{Interface}**.

- This displays three buttons labeled [ACN], [EDMX], and [All]. Select an interface for the selected device. Once your selection is made, the command line will populate with the correct interface after the address and terminate.

Step 5: Select the **{Database}** softkey to specify notes and keyword text related to the selected channel for reference and future queries.

- Clicking the **{Notes}** or a **{Text}** fields opens the virtual PC keyboard on the CIA. Pressing **[Enter]** returns the CIA to the database page.

If you create several addresses with multiple parts, you can select the same part for multiple channels by selecting a channel range and using the {Part} key:

- **[5] [Thru] [9] [Part] [2] [Enter]** - selects only part 2 of channels 5-9.

Dimmer doubling

You can patch channels in Ion to accomodate for dimmer doubling with Sensor+ dimmer racks. This is done using the softkeys available in patch ({No Dim Dbl}, {A}, and {B}).

For Example:

Let's assume you patch 96 channels of dimmers to addresses 1-96.

- ***[1] [Thru] [9] [6] [At] [1] [Enter]***

Now you wish to dimmer double 1-12 of your Sensor+ rack and you want these to be channels 97-108. To patch this, press:

- ***[9] [7] [Thru] [1] [0] [8] [At] [1] {B} [Enter]***

Channels 97-108 are patched to address 1-12 B, while channels 1-12 are now patched to address 1-12 A.

To remove the dimmer doubling from these addresses, you must first press [Format] to enter Address mode and then press:

- ***[1] [Thru] [1] [2] {NoDimDbl} [Enter]***

Addresses 1-12 have been returned to single dimmer modes and channels 97-108 are now deleted.

By default, doubled dimmers start with an offset DMX address value of 20000. Therefore, in the above example, address 1B (channel 97) is actually controlled by DMX address 20001. Address 2B is actually controlled by DMX address 20002 and so on. This offset matches the default offset in CEM+ when configuring your Sensor+ dimmer rack for dimmer doubling. To change the default offset value, see *Show Settings, page 81*.

Moving Channels

Channels can be moved from one location to another within patch.

- ***[1] [Copy To] [Copy To] [7] [Enter]***

The second press of the [Copy To] key changes the command into a "Move To".

This syntax will move the patch information for channel 1 to the patch for channel 3. All data in the show file that was stored at channel 1 is also move to channel 3.

Unpatch a channel

To unpatch a channel while in patch you can press:

- ***[n] [At] [0] [Enter]***

Unpatched channels can still be manipulated and can have data stored for them, but they do not output any information (as they are unpatched).

Patching Moving Lights

The process of patching moving lights requires more detail than patching a dimmer. Specific information is required for more advanced control of the features offered by moving lights.

Tutorial

Step 1: To patch a moving light you must first open the patch display. You may open the patch display from the browser or by pressing **[Displays]>{Patch}**.

Step 2: Enter a channel number or multiple numbers from the control keypad.

- When typing any number from the control keypad, and patch is in default channel mode, channel is assumed and is placed on the command line. You can use the [+], [-] and [Thru] keys to make your channel selection.
  For example: **[1] [0] [1] [Thru] [1] [1] [0]**

Note: *Alternatively, when patch is in address mode, DMX address is assumed and is placed on the command line. Channel mode and address mode are toggled using the [Format] key in the patch display.*

Step 3: Click the **{Type}** button in the CIA.

Step 4: Select a device type from the fixture library.

a: Press **{Manufacturer}** from the CIA to display the fixture library. The two columns on the left are pagable and show manufacturer names.

b: Use the arrow buttons to scroll the list of manufacturers. Selecting a manufacturer repaints the device columns with all devices from that manufacturer that are available for patching.

c: Scroll through the device list and make your selection. After the selection is made, the fixture or device type will be placed on the command line after the channel number and displayed in the box beneath the {Type} button.

Note: *Notice the two softkeys {Show}, {Manfctr}, and {User} located beneath the CIA.*

These softkeys provide you with the option of showing only the library of fixtures or devices that are already patched in the show {Show} or all fixtures or devices available in the library sorted by manufacturer {Manfctr}.

{User} displays user-defined devices. For more information, see *Fixture Creator, page 74**.*

Step 5: Enter a starting DMX address for the selected channel or group of channels.

- Press **[At]** and enter the DMX address using the control keypad. The DMX address may be entered in standard format ([1] [0] [2] [5]) or by using the port and offset value ([3] [/] [1]).

Step 6: To select a device interface *(optional)*, click **{Interface}**.

- This displays three buttons labeled {ACN}, {EDMX}, and {All}. Select an interface for the selected device. Once your selection is made, the command line will populate with the selected interface and terminate.

Step 7: Select the **{Attributes}** softkey to set detailed moving light attributes.

- The following softkeys are available from this page: {Invert Pan} and {Invert Tilt}, {Swap}, {Scroller}, {Gobo Wheel} and {Color Wheel}.
    - If your moving light includes parameters such as a color scroller or gobo wheel and you have custom gels or non-standard pattens installed, use the Scroller/Wheel Picker and the Editor to modify the device patched (See *Using the Scroller/Wheel Picker and Editor, page 68*). The more specific your patch data (including accurate colors and patterns) the more detailed programming and operating will be.

Step 8: Select the **{Database}** softkey to specify notes and keyword text related to your selected channel for reference and future queries.

- Clicking the **{Notes}** or **{Text}** button opens the virtual PC keyboard on the CIA. Clicking **[Enter]** returns the CIA to the database page.

Patching a Compound Channel

A compound channel consists of any channel that controls more than one device. It can consist of mutliple dimmers patched to the same channel or accessories patched to a channel (such as a fixture with a color scroller, a fixture with a gobo wheel, and so on).

To patch a compound channel in channel format:

- ***[8] [Part] [2] [At] [5] [1] [3]***

This will create a part 2 for channel 8 and address it at output 513. If you wish to patch by address while in the channel view, press:

- ***{Address} [5] [1] [3] [At] [8] [Enter]***

This will perform the same action as the previous example, assuming channel 8 was previously patched to an address.

To patch a compound channel in address format:

- ***[5] [1] [3] [At] [8] [Enter]***

This will perform the same action as the previous example, assuming channel 8 was previously patched to an address.

CAUTION: *It is recommended that you do not patch more than one multiple-parameter device (such as moving lights) to the same channel. Doing so can cause extreme difficulty in controlling the devices.*

Display Pages in Patch

Softkeys available for use while in patch include {Patch}, {Attributes}, and {Database}. Pressing any of these softkeys opens a paged view of the patch display and redraws the CIA to an expanded view of fields related to the selected page.

When creating and editing your patch, page through each of these softkeys individually to enter more specific data about your selected device.

{Patch} Display and Settings

When patch is opened, Ion defaults to this display. It provides access to data input fields that you may use to define devices in your lighting system.

- **{Channel}** - In the patch display, all channels are displayed in numerical order. When multiple devices are patched to the same channel, the channel number is only displayed in the first row, additional devices are indicated with part extensions (example P2) on the next row of the table.
    - Select the channel number using the control keypad or the direct selects.
- **{Type}** - It is not necessary to specify “type” when patching dimmers, Ion defaults to patching dimmers. To specify a specific device type for the selected channel, press the {Type} button from the CIA.
    - The two columns on the left side of the CIA are pagable and show manufacturer names by acronym. The four columns to the right of the manufacturer’s list are pagable devices that are available from the selected manufacturer for patching.
        - Selecting a specific manufacturer repaints the display with all devices that are available from that manufacturer. After you select a device, the device type appears in the command line, in the {Type} box in the CIA, and in the “Type” field for that channel in the patch display.

- **{Address}** - A required entry field for any device. You may use the [At] key rather than the {Address} button.
  - Use the keypad to define the starting DMX address for the device (from 1 to 32767) or a port and offset value.

Note: *Press and hold the **[Data]** key to show the complimentary value. For example if you have entered address value 514, the complimentary value would be port and offset value 2/2.*

  - You may enter a start address without defining an end address. Ion will draw this information from the library data. If you wish to leave a larger output gap than required by the library, use [Offset]. See *Using {Offset} in Patch, page 66*.
  - If you specify a start address that conflicts with other channels already patched, the conflicting channels will be unpatched.
- **{Interface}** - An optional field used to specify what network interface should be used for the output. When the field is left blank, the data is output on both EDMX and ACN. You may choose EDMX only, ACN only, or All.

Below are some examples of patching from the {Patch} display:

Patching a generic dimmer:

[1] [At] [5] [Enter] - patches channel 1 to output 5.

[1] [Thru] [2] [4] [At] [1] [Enter] - patches channel 1-24 to outputs 1-24.

Patching a moving light:

[2] {Type} {ETC} {Revolution IR/FR} [At] [1] [1] [Enter] - patches an ETC Revolution® fixture to channel 2, with a starting output address of 11.

{Attribute} Display and Settings

The {Attributes} page provides you with optional fields for additional information and details about the configuration of your system. Attribute settings include {Label}, {Proportion}, {Invert Pan}, {Invert Tilt} and {Swap}.

When the selected device includes a color scroller, a {Scroller} button will be displayed in the CIA, when the selected device includes a color wheel or a gobo wheel, {Color Wheel} or {Gobo Wheel} buttons will appear.

Click the desired attribute button and use the keypad to set the attribute value.

- **{Label}** - An optional user-defined label. You can use the [Label] key to display the virtual PC keyboard on the CIA.
  - **[1] [At] [5] [Label] <**S4 house right**> [Enter]** - patches channel 1 to output 5 and labels channel it “S4 house right”.
- **{Preheat}** - This field allows you to specify an intensity value to preheat filaments. The preheat value will be applied prior to any intensity move above 0% and will occur in the cue immediately preceding the cue with the intensity move instruction.
  - **[1] {Preheat} [1] [0] [Enter]** - channel 1 is assigned a patched preheat value of 10%.

  A preheat value can be assigned at any time using the {Preheat_On} softkey in live.
- **{Proportion}** - A dimmer attribute to set a modifier for the intensity of the device. If the patch limit is set at 90% (for example), the actual output will always be 10% lower than the specified intensity parameter, as impacted by the various output masters. This value is set numerically in a range of 0% to 200%.
  - **[1] [At] [5] {Attributes} {Proportion} [1] [2] [5] [Enter] -** patches channel 1 to dimmer output 5 and applies a 125% proportion.
  - **[1] [At] [5] {Attributes} {Proportion} [Enter]** - removes the applied proportion from channel 1.
- **{Curve}** - Used to assign a curve to an address in patch.

  From channel view:

  - **[1] {Curve} [4] [Enter]** - applies curve 4 to the address assigned to channel 1.
  - **[2] [Part] [3] {Curve} [3] [Enter]** - applies curve 3 to the address assigned to channel 2, part 3.

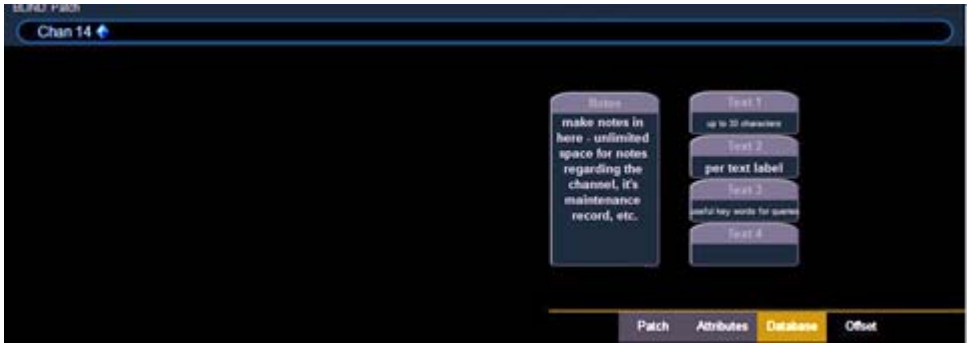
  From address view:

  - **[3] {Curve} [3] [Enter]** - assigns curve 3 to output 3.
  - **[3] [/] [2] {Curve} [4] [Enter]** - assigned curve 4 to universe 3, address 2.
- **{Invert}** - A moving light attribute used to invert the output of pan, tilt, or both. Select either the {Invert Tilt} or the {Invert Pan} button on the CIA.
  - **[2] {Type} {ETC} {Revolution IR/FR} [At] [1] [1] {Attributes} {Invert Pan}** - patches channel 2 with an ETC Revolution fixture at address 11 and inverts the output of the pan parameter.

- **{Swap}** - A moving light attribute used to exchange pan and tilt levels. Select the **{Swap}** button on the CIA.
  - **[2] {Type} {ETC} {Revolution IR/FR} [At] [1] [1] {Attributes} {Swap}** - patches channel 2 with an ETC Revolution fixture at address 11 and swaps the pan and tilt levels.
- **{Scroller}** - An attribute used to change the scroll loaded in a scroller or moving light. Select the **{Scroller}** button on the CIA to display the scroller picker and the scrolls available for your device. *See "Using the Picker" on page 68.*
  - **[2] {Type} {ETC} {Revolution IR/FR} [At] [1] [1] {Attributes} {Scroller}** - patches channel 2 with an ETC Revolution fixture at address 11 and opens the Scroller Picker in the CIA for scroll selection.
- **{Gobo Wheel}** - An attribute used to change the gobo wheel loaded in a moving light. Select the **{Gobo Wheel}** button on the CIA to display the wheel picker with gobo options available for your device. *See "Using the Picker" on page 68.*
  - **[3] {Type} {ETC} {Revolution SWW/IR} [At] [4] [5] {Attributes} {Gobo Wheel}** - patches channel 3 with an ETC Revolution fixture at address 45 and opens the Wheel Picker in the CIA for gobo wheel selection.
- **{Color Wheel}** - An attribute used to change the color wheel loaded in a moving light. Select the **{Color Wheel}** button on the CIA to display the wheel picker with the options available for your device. *See "Using the Picker" on page 68.* "More" as shown in the patch display, indicates additional parameter properties are available for the selected device, such as the color and gobo wheels.
  - **[4] {Type} {VariLite} {VL2000 Spot Standard} [At] [1] [5] [0] {Attributes} {Color Wheel}** - patches channel 4 with a VariLite VL2000 Spot fixture at address 150 and opens the wheel picker in the CIA for color wheel selection.

{Database} Display and Settings

The {Database} page provides you with additional fields for entering information. These fields include {Notes} and {Text 1} through {Text 4}.



- **{Text}** - Text fields are used to provide up to four keywords (see *Keywords, page 73*) about any channel or group of channels. These fields can be anything that you think is important about a channel, such as its location (FOH), an attribute of it (wash, spot) or other characteristics of the channel (such as gel R80). You may use the virtual PC keyboard in the CIA, or an external keyboard, to provide up to 30 characters of key words about the device.
  - **[5] {Database} {Text 1} <** FOH right**> [Enter]** - adds text to channel 5.
- **{Notes}** - Provides you the ability to attach a text note to a channel or group of channels. Select the {Notes} button on the CIA to display the virtual PC keyboard. You may type a label or any length of note regarding your channel in this space.
  - **[5] {Database} {Notes} <**this fixture is a backup to channel 15 for front of house right / new lamp installed on 10/4/06**> [Enter]** - adds a note to channel 5.

Using {Offset} in Patch

Using the {Offset} feature in patch allows you to force a numerical offset between the starting address of channels in patch or for offsetting your channel selection. This feature is useful when you have configurable devices in your show such as a Source Four Revolution which has option slots for additional addresses (scrollers, indexing pattern wheels, and so on). A fully configured S4 Revolution requires 31 DMX slots.

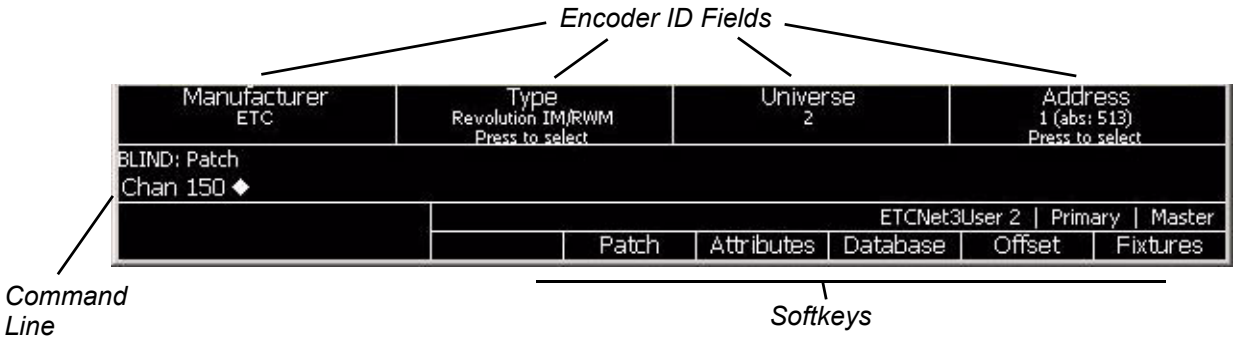
- **[1] [Thru] [5] {Type} {**Source Four Revolution**} [At] [1] {Offset} [3] [1] [Enter]** - fixtures will be patched with a patch address offset of 31 channels, allowing you to have additional space within the patch for a given fixture type regardless of configuration or personality.
- **[1] [Thru] [2] [0] {Offset} [2] {Type} {**Source Four Revolution**} [At] [1] {Offset} [3] [1] [Enter]**- selects every other channel in the list and patches them with an offset of 31 addresses.

Patch Channels from the Encoder LCD

You may use the encoders and LCD to patch channels in Ion. This is an alternative to using the methods described above. The end result will be the same, this simply gives you the ability to patch without requiring the use of the mouse.

To patch channels from the encoders and LCD:

Step 1: Press **[Displays]>{Patch}**. The LCD will change to display the patch interface.



Step 2: Select the channel you wish to patch.

- ***[9] [7] [Enter]***

Step 3: Using the encoders directly above “Manufacturer”, select the manufacturer of the fixture you want to patch. Once the manufacturer is selected, the fixtures available from that manufacturer automatically load to the “Type” encoder.

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Note: *If you wish to patch a standard dimmer, select “Generic” from the manufacturer list and “Dimmer” from the fixture list. Or you can simply press the [At] key (as in Patching a Dimmer, page 58) and dimmer is assumed.*

Step 4: Select the desired fixture type from those available from the manufacturer using the encoder above the “Type” field. When the desired type is displayed, press the “Type” encoder to select the displayed fixture type.

Step 5: Change the DMX universe, if needed, using the encoder above the “Universe” field.

Step 6: Set the DMX address to the desired number using the encoder above the “Address” field. address number is shown as 1-512 with the absolute address displayed in parentheses. When the proper address is shown, press the encoder to select the address. Your fixture is now patched.

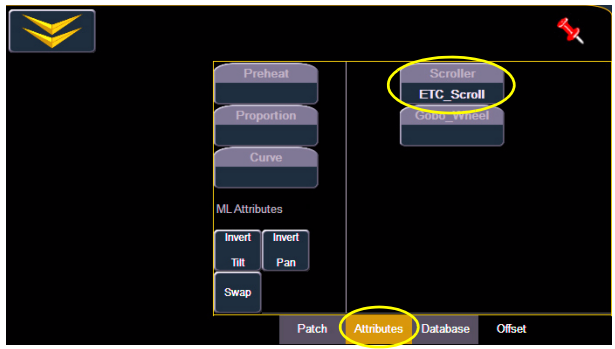
Using the Scroller/Wheel Picker and Editor

The scroller and wheel picker allows you to choose a specific scroll, color wheel, or gobo wheel from standard manufacturers and associate them with fixtures. You may also create customized scrolls or wheels using the editor to match custom devices installed in your fixture.

Using the Picker

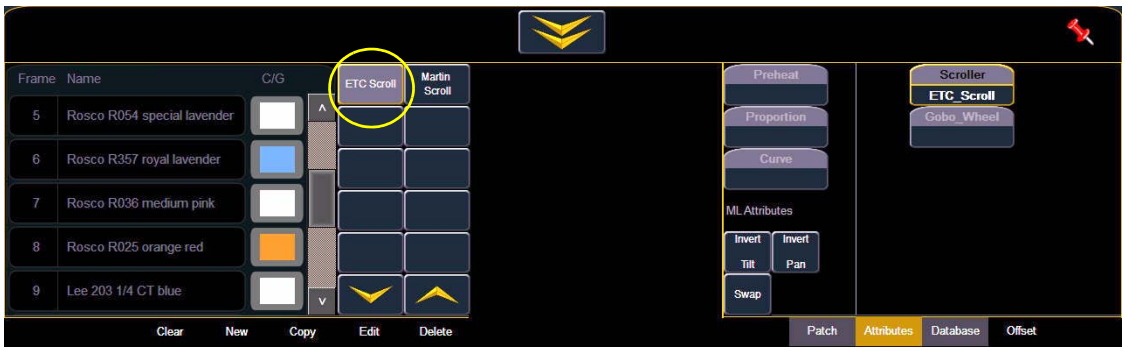
Default color and pattern media for the selected fixture, as determined in the fixture library, is displayed in the {Attributes} page. Only the media attribute that is available for the selected fixture will display.

In the sample image below, the selected channel (1) is a Source Four Revolution with a color scroller. If the selected channel included a color wheel and two gobo wheels, each device would be represented in the display with a button.



Select the attribute for the channel to open the picker.

The picker displays on the left half of the CIA when you select the specific attribute ({Scroller}, {Color Wheel} or {Gobo Wheel}). The picker displayed is specific to the selected attribute (the scroll picker will display when {Scroller} is clicked, the color wheel picker will display when {Color Wheel} is clicked, and so on).



Select the scroll or wheel type.

The picker displays buttons for the standard scroll or wheel type of the selected channel. The default selection is the wheel as shipped from the manufacturer (derived from the fixture library). Displayed to the left of the standard scroll or wheel selection is a list of each color or gobo as they are installed in the selected device (frame by frame). When the color or pattern image is available, it will display next to the frame name.

In the above image, {ETC Scroll} is the default scroll for the selected ETC Source Four Revolution. The list of gel colors as they are installed in the scroll are displayed to the left with a color chip for easy reference. Selecting any other type, such as {Martin Scroll}, redraws the frame list to match.

The softkeys displayed beneath the picker are {Clear}, {New}, {Copy}, {Edit} and {Delete}.

- {Clear} - clears the selection type from the selected channel in the picker.
- {New} - creates a new scroll or wheel and provides additional softkeys to enable the Editor. See *Using the Editor* below.
- {Copy} - makes a copy of the currently selected scroll or wheel type, which can then be edited using the editor. See *Using the Editor* below.
- {Edit} - used to edit an existing scroll or wheel.
- {Delete} - used to remove the selected frame only from a scroll or wheel that you have created.

Using the Editor

The editor is used to create new or edit copied scrolls and wheels. While in the picker display, you can create a new scroll or wheel by pressing the {New} softkey or make a copy of an existing scroll or wheel by selecting the source, then pressing the {Copy} softkey.

The editor does not limit how many frames you can add to the scroll or wheel for the selected fixtures. Keep in mind that any fixture has its own limitations. For example, a Source Four Revolution color scroller is limited to 24 frames. If you have created a custom color scroll with 30 frames, the Source Four Revolution will only provide you access to the first 24 frames that you created. This applies to wheels as well.

When using the editor, the following softkeys are available for use:

- {Insert} - inserts a new frame above the selected frame.
- {Delete} - removes the selected frame.
- {Edit} - changes the selected frame.
- {Done} - completes the editing process.
- {Label} - displays the virtual PC keyboard on the CIA for labeling the new scroll or wheel.

Creating a new scroll or wheel

When you create a new scroll or wheel, {new wheel} appears in the wheel list as the selected button. The frame list will be empty with only “New” displayed in frame 1.

You can label the new wheel by pressing the {Label} softkey and typing the desired label on the virtual PC keyboard and pressing {Enter}.

To select a color or pattern for the specific frame in the scroll or wheel, select the “NEW” text. The available gel, color, gobo and effect media selections will be displayed.

Manufacturer list *Manufacturer catalog* *Cataloged media (sorted numerically)*

The media selection includes the following softkeys:

- *{Gel}, {Color}, {Gobo} and {Effect} - each will display available media selections as they are cataloged by the associated scroll or wheel manufacturers*
- *{Open} - places the frame in Open White. Generally, the first media frame is open.*
- *{Cancel} - cancels the media selection and returns to the frame editor.*

When a manufacturer is selected from the list, the catalog selection changes to display only the selected manufacturer’s offerings. When a specific catalog is selected, the media will display in the last three columns of the editor.

When you make a media selection, the display returns to the new wheel frame list where additional frames can be added to the scroll or wheel (using the {New} frame button) or you can click in the next frame area to add more frames.

Editing a copy of a scroll or wheel

If a copy has been made of an existing scroll or wheel, the copied scroll or wheel will display as {new wheel} beneath the standard manufacturer offerings. The frame list will include an exact duplicate of the copied selection.

To make a change to a frame you must first select the frame then press {Edit} to display the media selection. Or you can insert a new frame above a selected frame using the {Insert} softkey.

For example, to insert a new frame in between existing frames 2 and 3, select frame 3 and press the {Insert} key. The media selection will display.

Manufacturer List *Manufacturer catalog* *cataloged media (sorted numerically)*

The media selection includes the following softkeys:

- *{Gel}, {Color}, {Gobo} and {Effect} - each will display available media selections as they are cataloged by the associated scroll or wheel manufacturers*
- *{Open} - places the frame in Open White*
- *{Cancel} - cancels the media selection and returns to the frame editor.*

When a manufacturer is selected from the list, the catalog selection changes to display only the selected manufacturer's offerings. When a specific catalog is selected, the media will display in the last three columns of the editor.

When you make a media selection, the display returns to the new wheel frame list where additional frames can be edited in the scroll or wheel.

Calibrating a Scroller

You can calibrate the center point of any frame in a scroller using the calibrate feature.This will ensure that color scroll frames will be centered over the aperture of the fixture when you advance a color scroll frame-by-frame. You can do this using the virtual encoders or the encoder LCD.

Note: *It is recommended that you calibrate your scroller frames starting with the last frame and working backward to the first frame. This will help ensure a complete and accurate calibration.*

Calibration may need to be performed when you initially patch a scroller and may need to be adjusted through the course of operation as spring tension changes in a color scroller

To calibrate a scroller:

Step 1: In the browser, navigate to **Virtual Controls>Encoder**. A new window will open in the CIA.

Step 2: Select **{Open as Primary Display}** in the CIA. Virtual encoders will open on the display screen.

Step 3: Select the channel of the scroller you wish to calibrate.

Step 4: Press the **[Color]** encoder button to the upper right of the LCD. Multiple presses may be required before the scroller encoder is visible in the virtual encoder display**.**

Step 5: Use the encoder to move all the way to the last frame of the scroller.

Step 6: Watch the scroller and continue adjusting the frame until it is centered in the desired position.

Step 7: Click **{Calibrate}** in the virtual encoder display. The new center position is now stored for the selected channel.

Step 8: Click **{Last}** in the virtual encoder display to move to the center point of the previous frame.

Step 9: Visually verify if the center point of the new frame is accurate. If it is, press {Last} again to move to the previous frame in the scroll. If not, follow the calibration procedure again.

Step 10: Repeat steps 6-9 until you have calibrated all of the frames.

Step 11: Press **[Live]** or **[Blind]** to close the virtual encoder display.

You can also calibrate from the encoder LCD. This eliminates the need for the virtual encoder display.

To calibrate from the LCD:

Step 1: Select the channel of the scroller you wish to calibrate.

Step 2: Press the **[Color]** encoder button to the upper right of the LCD. Multiple presses may be required before the scroller encoder is visible in the virtual encoder display**.**

Step 3: Use the encoder to move all the way to the last frame of the scroller.

Step 4: Watch the scroller and continue adjusting the frame until it is centered in the desired position.

Step 5: Press and hold the scroller encoder. {Calibrate} becomes visible as a softkey in the encoder LCD.

Step 6: Press **{Calibrate}**. The new center position is now stored for the selected channel.

Step 7: Continue holding the encoder and press **{Last}** to move to the center point of the previous frame.

Step 8: Visually verify if the center point of the new frame is accurate. If it is, press {Last} again to move to the previous frame in the scroll. If not, follow the calibration procedure again.

Step 9: Repeat steps 6-9 until you have calibrated all of the frames.

Keywords

Query is a feature available in Eos, but not in Ion. Since show files are compatable between the two consoles, in Ion you can assign keywords to channels that can be queried when the show file is loaded onto an Eos.

If you plan on being able to query channels in Eos based on a keyword association, the keyword must be defined in patch.

To enter a keyword for a channel:

Step 1: Press **[Displays]**, to the right of the LCD.
Step 2: Press the **{Patch}** softkey.
Step 3: Press **{Database}**.
Step 4: Select a channel or range of channels in the command line.
Step 5: Click one of the **{Text (1-4)}** buttons in the CIA to specify which keyword you are entering. The virtual PC keyboard will appear.
Step 6: Type the keyword or words you wish to use. You may use either the virtual or external keyboard.
Step 7: When finished, press **[Enter]**.

Once keywords have been created, they will appear in the keyword section of the CIA when a query is performed in Eos.

Deleting Channels

It is possible to delete channels in patch. Deleting channels is different from unpatching in that deleted channels cannot be manipulated or have parameter data stored for them. When deleted, the channel numbers will still be visible in the live/blind display, but the channel outline, containing the parameters and level information, will be removed from the display.

For Example:

To delete channels in the patch display, press:

- ***[6] [Thru] [1] [0] [Delete] [Enter] [Enter]***

In the live blind display, the channel numbers will still be visible but the channel outlines and parameter data will be hidden from view.

Fixture Creator

Ion provides you with the ability to create your own fixture type within patch and store it with your show file. You can name the fixture, assign all necessary parameters, define the address of those parameters, and specify the operational range of them as well.

Note: *You cannot edit existing fixture library data from the fixture creator. You must create a new fixture entirely to customize any fixture for your show.*

The fixture creator is accessible from patch. Once a fixture has been created, it is stored in the show file. It is *not* added to the fixture library.

To open the fixture creator:

Step 1: Press **[Displays]>{Patch}** to open the patch display. Or you may open it from the browser.

Step 2: Select any channel (it need not be the channel for the fixture you are creating, but it can be) from the keypad.

Step 3: Click **{Type}** in the CIA patch display. The left side softkeys will change to offer fixture type options.

Step 4: Click **{User}**. This will display buttons for all currently patched fixtures in the CIA.

Step 5: Click **{Edit}**. This will open a list displaying those same fixtures that are currently patched. This is the fixture creator.

Number	Type	Number Of Parameters
1	Dimmer	1
2	joe's_fixture	1
3	cool_mover	4
4	Coloram_2_Scroller	4
5	Studio_Spot_575_CMY	23
6	Mac_250+_M4	16
7	Drd	10
8	VL1000_AI	20
9	new_fixture_(1)	1
10	Revolution_IM/RVM	19

Creating a New Fixture

New fixtures are created from the fixture creator list in the CIA (see above).

To create a new fixture, click **{New}**. A new fixture will be added to the bottom of the fixture list.

Name New Fixture

Once the new fixture appears in the list, it is recommended that you name the fixture you are about to create.

To name a fixture in the creator list:

Step 1: Press **[Page ▼]** to arrow down to the new fixture.
Step 2: Click **{Type}**. The virtual PC keyboard will open in the CIA.
Step 3: Enter the desired name for the new fixture on the virtual (or attached alphanumeric) keyboard.
Step 4: Press **[Enter]**. The name will appear in the “Type” column for the new fixture.

Add parameters

After naming the fixture, you can specify which parameters the new fixture contains.

To add parameters to a new fixture:

Step 1: Use the **[Page]** keys to select the new fixture from the fixture list.

Step 2: Click **{Edit}**. That fixture will open in a new display in the CIA.

Number	Parameter	Size	DMX	LDMX	Home	Ranges
1	Intensity	8BITS	1		0	1
2	Pan	16BITS	2	3	0	1
3	Tilt	16BITS	4	5	0	1
4	Hue	8BITS	6		0	1
5	Saturation	8BITS	7		0	1
6	Cyan	8BITS	8		0	1
7	Magenta	8BITS	9		0	1
8	Yellow	8BITS	10		0	
9	Lamp_Control	8BITS	11		0	
10	Strobe_Mode	8BITS	12		0	

Step 3: Determine the total number of parameters that your fixture has. Do not count 16-bit channels as two channels, this will be done in a later step.

Step 4: Click **{New}** to add parameter slots. Repeat this step until you have as many slots as are required by the number determined in step 1.

Note: *When {New} is clicked, the parameter slot will appear in the list with a default name in the "Parameter" column. You may disregard these default parameters as you will redefine the designations in a later step.*

Step 5: Use the **[Page]** keys to navigate to any parameter slots that you wish to alter the default parameter designations for.

Step 6: When you have selected a slot, click **{Parameters}**. The CIA will display buttons representing all of the available parameters.

a: Click the **{>>}** and **{<<}** buttons to scroll through the available parameters (in alphabetical order).

The buttons on the left side of the CIA can be used to speed your search. You may click them to see only parameters that fall into the specific categories of {Intensity}, {Focus}, {Color}, {Image}, {Form}, {Shutter}, or {Control}. {All} returns you to the complete list of parameters.

b: Use the parameter category buttons on the left of the CIA to expedite searching for a particular parameter.

Step 7: Click the button for the desired parameter in the CIA.

Step 8: Repeat steps 3-5 until you have entered all of the required parameters for the new fixture.

If you are missing a parameter slot: At any point you can use the **[Page]** keys and **{Insert}**, to insert a parameter slot above the selected one.

If you want to remove a parameter: you can use the **[Page]** keys and **{Delete}**, to remove a parameter from the list.

Define parameter channels

Once you have added and specified all of the parameters for the new fixture, you can now define the address requirements, size, and ranges for each of them.

To define the size (8-bit or 16-bit) of any parameter:

Step 1: Use the **[Page]** keys to navigate to any parameter that you wish to alter the size of. The system defaults to 8-bit for any new parameter.

Step 2: When selected, click **{Size}**. This will toggle the parameter from 8-bit to 16-bit. If 16-bit is selected, the system automatically applies a value in the “LDMX” column. This value can be altered (see below).

To define the DMX address of any parameter:

You can alter the default DMX address assigned to any parameter in the list. This is not the actual address that will be used when patched, but rather it is the order of address for the parameter relative to the other parameters in the fixture.

Step 1: Use the **[Page]** keys to navigate to the “DMX” column of the desired parameter.

Step 2: Enter the desired address using the keypad.

CAUTION: *Be careful not to duplicate any address in the DMX order of parameters in the new fixture. Ion does not prevent you from duplicating addresses.*

To define the LDMX address of any 16-bit channel:

LDMX or “low-DMX” is the DMX address for the second half of any 16-bit channel. If used in Coarse/Fine determination. The DMX channel defines the “Coarse” adjustment and the LDMX defines the “Fine” adjustment.

Step 1: Use the **[Page]** keys to navigate to the “LDMX” column of the desired parameter.

Step 2: Enter the desired address using the keypad.

CAUTION: *Be careful not to duplicate any address in the DMX order of parameters in the new fixture. Ion does not prevent you from duplicating addresses.*

To alter the Home settings for any parameter:

You can define the value for any parameter's "home" value.

Step 1: Use the **[Page]** keys to navigate to the "Home" column of the desired parameter.

Step 2: Enter the desired home value (0-255) using the keypad.

Range editing a parameter

You can enter the operational ranges for specific slots within any specific parameter (such as color scroller, color wheel, gobo wheel, and so on).

For example, if the parameter were "Gobo Wheel", and the fixture included a four-slot gobo wheel, you can use ranges to determine the minimum or maximum values for each of those slots. You can also label the slots and define the minimum or maximum values that will appear in the channel display for that parameter.

To define the range values for any parameter:

Step 1: Use the **[Page]** keys to navigate to the parameter that you want to add ranges to.

Step 2: Click **{Ranges}**. The range list will open.

Step 3: Determine the total number of slots required by the parameter. *Be sure to include "open" slots when needed.*

Step 4: Click **{New}** to add ranges. Repeat this step until you have as many slots as are required by the number determined in step 3.

Step 5: Use the **[Page]** keys to select the range and field you wish to edit. Fields are:

- **Min** - enter the minimum value (0-255) for the range slot you are defining.
- **Max** - enter the maximum value (0-255) for the range slot.
- **User Min** - enter the value that will be displayed to users (for example, what will be displayed in the live summary view) when the slot is at its minimum value. Value can range from -9999 to 65535.
- **User Max** - enter the value that will be displayed to users when the slot is at its maximum value. Value can range from -9999 to 65535.

Step 6: Click **{Label}** to add a label to any range slots. These will appear in the encoder LCD when the related parameter is displayed for the new fixture.

Step 7: Click **{Done}** when you have finished editing the ranges.

Update Library

When a new library is installed on Ion (for example, included in a software update), changes in library data will not automatically update your show files. This is to prevent library changes from affecting a functional show file.

In the event that you wish to update the show's fixture data to match a new library, you may enter the fixture creator (see *Fixture Creator, page 74*) and click **{Update Lib}**. This will update the show file fixture data with any relevant changes from the new fixture library.

Chapter 6

Setup

This chapter describes the processes involved in changing your system settings to meet your preferences. It also covers advanced setup functions.

This chapter contains the following sections:

- ***Opening Setup*** 80
- ***Show*** 80
- ***Desk*** 84
- ***Security*** 89

Opening Setup

To enter the setup screen, press **[Displays]>{Setup}**.

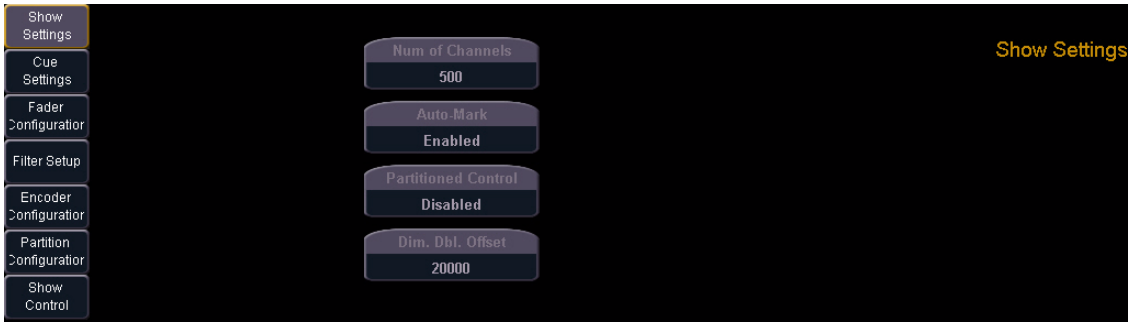
The CIA will repaint to display the setup screen and the softkeys will change to display the various subcategories of setup. Ion defaults to display show settings, however if you have changed the view to another subcategory, Ion will remember the view you were in when you return to setup.

The setup subcategory softkeys are:

- Show
- Desk
- Security

Show

When you select the {Show} softkey, the CIA repaints to display the following screen:



The buttons on the left are the setting categories within show setup. The show setup categories are:

- Show settings
- Cue settings
- Fader configuration
- Filter setup
- Encoder configuration
- Partition Configuration
- Show Control

Show Settings

Click {Show Settings} to enter this category.

Three fields will be available to you: {Num of Channels}, {Auto-Mark}, and {Partitioned Control}. To change the setting for any of these fields, click the field in the CIA to activate it. If the field requires data, enter it from the keypad. If the field is a toggle state, one click of the button will switch the field to its other state.

Changes from this screen are systemwide and will impact all Ion consoles and clients connected to the system.

{Num of Channels}

You may use this field to set the number of channels in your Ion to the number of channels in your system. Ion supports a maximum of 5000 channels. Enter the number of channels for your system using the keypad. This entry must be confirmed with the [Enter] key.

{Auto-Mark}

This toggles the AutoMark settings between enabled and disabled (see *Using Mark, page 159* for more information).

{Partitioned Control}

This feature will be available in a future release.

{Dimmer Double Offset}

This allows you to set the address offset for dimmer doubling. The default for this is 20000, to match the Net2 standard offset, including Sensor+ software.

Cue Settings

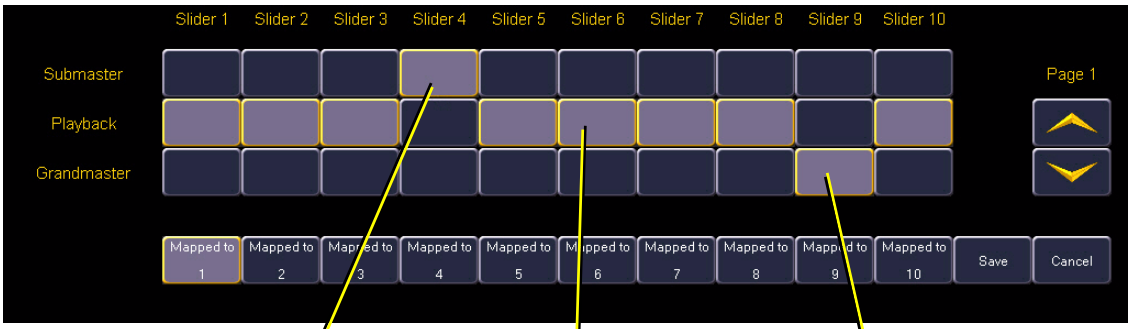
This screen allows you to set the default cue times for the parameter categories of your Ion system. To change a time, click the parameter category button in the CIA and enter the desired time on the keypad. To set a time for all categories at once, press [Intensity Up] [Thru].

The categories for which you may set default times are:

- Intensity Up
- Intensity Down
- Focus
- Color
- Beam
- Multipart Cue - this feature will be available in a future release.

Fader Configuration

This screen allows you to specify what your faders are assigned as: playbacks, submasters, or grand masters. These faders can be used by opening the virtual faders (see *Virtual Faders, page 29*).



To change the configuration of any fader, use the **{Page}** buttons to access the fader page you wish to alter. For the desired fader, click the appropriate button (playback, submaster, or grandmaster) for the configuration you desire. Then click the **{Mapped to}** button and enter the number you want to map the fader to (see *Mapped to...*below). When you are done making changes, click **{Save}.**

To leave this screen at any time without saving changes, you must click **{Cancel}**.

Mapped to...

This button is used to specify the action target of any fader. It allows you to define the fader target that a slider is assigned to. Mapping is specific to the type of fader configuration (playback, submaster, or grandmaster).

Submaster - A maximum of 200 submasters can be recorded. {Mapped to} defines the submaster number that will be controlled by the specified slider. If a submaster slider is mapped to 10, when submaster 10 is recorded it will appear on that slider.

Grand master - A maximum of 1 grand master may be assigned. A grand master can be assigned to control only certain channels.

Playback - A maximum of 30 playbacks can be assigned. {Mapped to} can allow you to have the same playback appear on multiple pages as it represents a playback number, not a specific fader number. To change the mapped location of any playback, click the **{Mapped to}** button for that slider and enter the number you wish to assign it to.

Grand Masters, Submasters, and playbacks may appear on more than one fader page.

For Example:

You want a specific cue list (cue list “x”) to appear as the last fader on every fader page.

In fader configuration, on each fader page assign one slider per page as a playback and map it to 10.

When you load cue list x to fader 10, on any page that has a fader mapped to playback 10, cue list x will be loaded to that fader.

Note: *Specifying a {Mapped to} location does not specify the cue list that will be loaded to that playback. Cue lists can be assigned to any playback. {Mapped to} establishes the order in which faders will be loaded.*

Whatever playbacks are mapped to “1”, they will auto-load with the first recorded cue list. Whatever submasters are mapped to “1”, they will auto-load with the first recorded submaster. Any playback mapped to 5 will auto-load with the fifth recorded cue list, and so on.

Show Control

This section allows you to to adjust settings for MIDI show control and for time code (MIDI or SMPTE) functions

{SMPTE Time Code}

This button is used to toggle SMPTE time code between “Enabled” and “Disabled,” thereby controlling whether Ion can receive SMPTE time code. Choosing “Disabled” will disable all timecode lists that have a SMPTE source. The default for this setting is “Enabled.”

{MIDI Time Code}

As above, but for MIDI instead of SMPTE. The default for this setting is “Enabled.”

{MSC Receive}

This button toggles the setting for receiving MIDI Show Control from an external source between “Enabled” and “Disabled.” The default setting is “Disabled.”

{MSC Receive Channel}

Also known as “Device ID” this setting allows you to establish the device ID from which Ion will receive MIDI show control information. Only MSC data with the correct device ID will be received. A device ID can be from 0-126, or if set to 127 Ion will receive MSC data from all IDs (All Call). For example:

- {MSC Receive Channel} [5] [0] [Enter]

{ACN - MIDI Receive Id(s)}

This setting allows you to specify the MIDI Show Control data that Ion will receive when transmitted over the Advanced Control Network (ACN). When set, Ion will receive MSC data from any gateway that has its “MIDI In Stream ID” set to the same number. ACN_MIDI Receive ID can be from 1-32. ID ranges may be used. For example:

- {ACN_MIDI Receive ID} [2] [5] [Enter]

{MSC Transmit}

This button toggles the setting for transmitting MIDI Show Control data between “Enabled” and “Disabled”. The default setting is “Disabled”.

{MSC Transmit Channel}

Also know as “Device ID” this setting allows you to establish the device ID with which Ion will transmit MIDI show control information. A device ID can be from 0-126. For example:

- {MSC Transmit Channel} [5] [0] [Enter]

{ACN - MIDI Transmit ID}

This setting allows you to specify the ID number of MIDI Show Control data that Ion transmits over an Advanced Control Network (ACN). When set, Ion will transmit MSC data to any gateway that has its “MIDI Out Stream ID” set to the same number. ACN_MIDI Transmit ID can be from 1-32. ID ranges may be used.

- {ACN_MIDI Transmit ID} [2] [5] [Enter]

Note: *Filter setup, Encoder configuration, and Partition Configuration settings are not available at this time.*

Desk

This setup softkey accesses settings for the specific Ion device. Changing these settings does not impact other Ion controllers on the network. Two setting buttons are available in desk settings: {Record Defaults} and {Manual Control}.

{Record Defaults}

This screen enables you to change general record defaults as well as change the default parameter category times associated with certain actions ([Back], [Go to Cue], and [Assert]).

To change the setting for any of these fields, click the field in the CIA to activate it. If the field requires data, enter it from the keypad. If the field is a toggle state, one click of the button will switch the field to its other state.

Auto Playback

When enabled, this feature automatically plays back cues as they are stored and releases manual control. This field is a toggle state between enabled and disabled. When auto playback is disabled, all manual levels are maintained and cues must be loaded and executed on playbacks. The default is “Enabled”.

Track

This field allows you to switch between tracking and cue only modes (see *Tracking vs. Cue Only, page 6*). The default is “Tracking”.

Record Confirm

This setting allows you to enable or disable the confirm action when storing over a previously recorded target. The default is “Enabled”.

Auto Save

This setting enables of disables autosave functions. When enabled, Ion will automatically save the show file based on the auto save interval (see below). When disabled, show files must be stored from the browser. The default is “Disabled”.

System Blocks

This setting enables or disables system-applied blocks. When enabled, if a channel level is changed to match the channel level in a succeeding cue, Ion will apply a block to the channel levels in the succeeding cue, thereby preserving the initial concept of a move instruction for that parameter (see *Block, page 146*).

When disabled, the value in the subsequent cue will be changed to be a tracked value and the move instruction will be removed. The default is “Enabled”.

Delete Confirm

This field allows you to enable or disable a required confirmation before any delete command is executed. The default is “Enabled”.

Auto Save Interval

This setting defines the frequency of auto saves (when they are enabled). Time can be entered in seconds (30) or minutes and seconds (10:30). Use the keypad to enter times and verify in the command line that the timing value appears as you intended.

Back Time, Go To Cue Time, Assert Time

Each of these features allow you to change the respective feature response times based upon parameter category. Each parameter category (Intensity Up, Intensity Down, Focus, Color, and Beam) may have a specific time for each feature. The default for all times in these features and categories is 5 seconds.

You can change all of these times by selecting the first available and pressing [Thru] followed by a number of seconds and then [Enter].

{Manual Control}

This desk setting button gives you access to Ion manual control settings.

Manual Time

In this section you may change the default times for manual changes to occur in live. Times can be set for each parameter category (Intensity Up, Intensity Down, Focus, Color, and Beam). You may use the [Thru] key to enter a value for all categories.

- ***{Int Up} [Thru] [9] [Enter]***

The default for each of these is 0 seconds.

Manual Control

This section allows you to specify the values for certain buttons used in manual control. To change any value, click the appropriate button in the CIA and use the keypad to enter a new value.

Highlite - This feature will be available in a future release.

Level - This sets the level for the [Level] key. Any value between 0-100 may be entered. The default is 100.

Plus % - This sets the level for the [+%] key, which will increase the selected channel by the set percentage. Any value between 0-100 may be entered. The default is 10%.

Minus % - This sets the level for the [-%] key, which will decrease the selected channel by the set percentage. Any value between 0-100 may be entered. The default is 10%.

Sneak Time

In this section you may change the default times for sneak commands to appear in live. Times can be set for each parameter category (Intensity Up, Intensity Down, Focus, Color, and Beam). You may use the [Thru] key to enter a value for all categories.

- ***{Int Up} [Thru] [9] [Enter]***

The default for each of these is 5 seconds.

{Face Panel}

Sounds

You can adjust the frequency and length of the audible sounds that Ion delivers. Sounds are qualified as being either an error sound or an advisory sound. Both types of sounds can be adjusted from this setup screen in the CIA.

To adjust a sound, move the virtual slider with the mouse on the CIA. To hear the result of your adjustment, click the **{Test}** button respective to the sound type, located beneath the sliders.

To turn off all sounds completely, error and advisory alike, click the **{Turn Sounds Off}** button. The sound area will then be replaced with a {Turn Sounds On} button, which can be pressed to reactivate audible signals in Ion.

Level Wheel

You can adjust the increment and acceleration effect of the level wheel from this screen as well.

To alter the number of ticks in a full turn of the level wheel, adjust the slider labeled “LW ticks”. This will increase or decrease the amount of change effected when you use the level wheel. A higher tick setting will increase the amount of change resulting from one turn while lower settings will decrease the amount, making smaller adjustments easier to perform. The options range from 50 - 255 ticks. The default is 150.

Ion also provides an adjustable acceleration feature for the Level wheel. This feature allows you to adjust the wheel’s sensitivity to fast adjustments, thereby temporarily overriding the number of ticks setting. To adjust the level wheel acceleration, use the virtual slider labeled “LW Acc. Factor”. The higher the slider setting, the less sensitive the level wheel will be to acceleration. The lower the setting, the more sensitive it is. When set low, the faster you move the wheel, the greater the increment covered by a revolution. When movement stops, the normal LW ticks will be reinstated.

Encoder

Similar to “LW Acc. factor” (see above), the encoder acceleration factor is used to adjust the acceleration of all encoders.

To adjust the encoder acceleration, use the virtual slider labeled “Encoder Acc. Factor”. The higher the slider setting, the less sensitive the level wheel will be to acceleration. The lower the setting, the more sensitive it is.

{Displays}

This desk setting button gives you access to the Ion display settings.

High Contrast Display

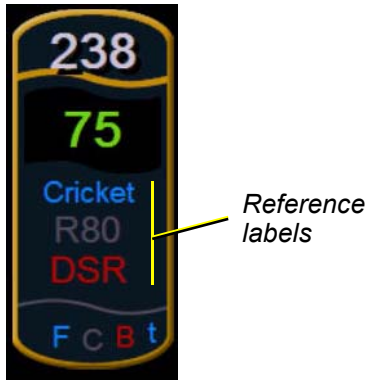
This button toggles the setting between “Enabled” and “Disabled”. When enabled, high-contrast brightens the cue numbers and channel numbers in displays and also brightens the magenta used to show tracked values.

The default setting for this is disabled.

Show Reference Labels

This button toggles the setting between “Enabled” and “Disabled”. When enabled, referenced record targets (such as presets or palettes) with labels will have their labels displayed in the live/blind display rather than their target type and number.

The default setting for this is disabled.



Security

This feature will be available in a future release.

Chapter 7

Basic Manual Control

Ion provides a variety of ways to select and command control channels. This chapter identifies the many basic ways you can select channels and manipulate show data within Ion.

This chapter contains the following sections:

- ***Selecting Channels*** 92
- ***Setting Intensity*** 94
- ***Manual Control of Non-intensity Parameters (NPs)*** 96
- ***Home*** 103
- ***Lamp Controls*** 104
- ***Using [+%] and [-%]*** 105
- ***Remainder Dim*** 106
- ***Sneak*** 107
- ***Flip*** 107
- ***"Select" Keys*** 108
- ***Channel Check*** 109
- ***Address at Level*** 109
- ***Using {Move To}*** 110

Selecting Channels

Ion provides interactive ways to select channels including the control keypad and direct selects. Ion makes it possible to select channels by one method and add to the selection using other methods.

Channels are deselected when any action is taken on the keypad that is unrelated to manual control, such as recording groups and cues, or updating a record target, etc. You can also press **[Clear]** after a terminated command line to clear the channel selection.

Select Channels From the Keypad

The keypad defaults to selecting channels, therefore no channel key is provided. Channels may be selected on the control keypad using the [+], [-], and [thru] keys for consecutive or non-consecutive channel selection.

The following examples illustrate various methods of selecting channels from the control keypad:

- **[5] [Enter]** - selects channel 5.
- **[5] [+] [7] [Enter]** - selects non-consecutive channels 5 and 7.
- **[5] [thru] [9] [Enter]**- selects channels 5 through 9.
- **[2] [thru] [8] [-] [5] [Enter]** - selects a range of channels 2 through 8, except channel 5.
- **[-] [6] [Enter]** - removes channel 6 from the current selection list.
- **[+] [1] [Enter]** - adds channel 1 to the current list of channels.

Note: *You may use [+] and [-] multiple times to add or remove multiple channels from the selection. [Thru] lists may be entered in ascending or descending order.*

[Next] and [Last]

The [Next] and [Last] buttons increment and decrement channel selection. If only one channel is selected, [Next] increments the channel selection to the next sequential channel, while [Last] decrements the channel selection by one.

Select channel 10 then change the selection to channel 11 using the [Next] key:

- ***[1] [0] [Enter]***

Channel 10 is selected with a gold outline around the entire channel and the channel number is indicated in white.

- ***[Next]***

Channel 11 is now selected with a gold outline and white channel number while channel 10 is no longer selected.

If there is no specific channel selected when [Next] or [Last] is pressed, channel 1 is selected. When a group of channels is selected, pressing [Next] or [Last] selects the first or last channel in the channel list.

For Example:

Channels 11 through 20 are selected:

- ***[Next]***

Channels 11 through 20 are still the specified channel list but only channel 11 is selected for control.

Offset

{Offset} is a feature used to select a range of channels from a broader channel selection. For the offset feature to function, you must first select a group of channels, then press **{Offset}**. When {Offset} is pressed, the softkeys change to the following: {Even}, {Odd}, {Reverse} and {Random}. These keys, along with the numeric keys from the keypad are used to create channel offsets.

The following examples illustrate how offset works:

- **[1] [thru] [10] {Offset} {Even} [Enter]** - selects channels 2, 4, 6, 8, 10.
- **[1] [thru] [2] [0] {Offset} [3] [Enter]** - from the selected group, this syntax would select channels 1, 4, 7, 10, 13, 16, 19 which is an offset of every third channel from the selection.
- **{Group 5} {Offset} {Random} [Enter]** - selects all channels in Group 5 and places them in random order. This selection may be used only temporarily or it may be recorded to a new Group.
- **[1] [thru] [2] [0] {Offset} {Even} {Random} [Enter]** - selects all even channels within the range and puts them in random order.
- **{Offset} [4] [Enter]** -selects every fourth channel in the current channel selection.

Setting Intensity

Channel intensity may be manually entered from the keypad, set with an intensity palette (if programmed) or set with the level wheel. Pressing **[At]** after channel selection assumes an intensity value will be added to the selected channels. You may also use the [Full] button to bring the selected channels to their full intensity or you may use the [Out] button to fade the intensity out.

Use the [Level], [+%] and [-%] keys to affect the intensity value of selected channels. Each of these keys are set at a specific value established in the **Setup** (*{Manual Control}, page 86*).

- [Level] is set by default to full (100% intensity).
- [+%] and [-%] are each set by default value of 10 points.

The following examples illustrate the various methods of setting intensity:

- **[1] [+] [3] [At] [5] <0> [Enter]** - selects channels 1 and 3, and sets an intensity level of 50%.
- **[1] [thru] [5] [-] [4] [Full] [Enter]** - selects a range of channels 1 through 5, except channel 4, and sets the intensity to full.
- **[1] [thru] [8] [At] [+] [3] [Enter]** - adds 30% to all intensities in the channel selection. If they were at 50, they will now be at 80. If channels 1, 3, and 5, were at 30 and 4 was at 50, they would be 60% and 80% intensity, respectively.
- **[5] [thru] [8] [At] [/] [3] [Enter]** - scales the intensities of the selected channels in the list down 30% of their current values.
- **[1] [thru] [4] [At] [/] [1] [3] [0] [Enter]** - scales the intensities of the selected channels in the list up 30% of their current values. If channels 1 through 4 were at 40% intensity, this would scale them up by 30% to a value of 52.
- **[2] [+] [5] [**level wheel**]** - roll the wheel up for greater intensity or down for less intensity.
- **[1] [Level]** - selects channel 1 and sets it to the level as established in **Setup**.
- **[Group] [9] [Out]** - selects all channels in Group 9 and sets the intensity values for those channels to zero. The exception would be if any channels in Group 9 were parked or captured.

As long as channels are on the command line you can continue to address them with commands without having to reselect them.

For Example:

- ***[1] [thru] [5] [Full] [Enter]***

The selected channels are highlighted in gold, with white channel text and red intensity values (indicating manual data). You may continue to modify channels 1 through 5 since they are still selected and displayed on the command line.

- ***[-%] [-%]***

This command would reduce the intensity of channels 1 through 5 by 20%. This command is self-terminating.

- ***[at] [7] [5] [Enter]***

You can continue manipulating the selected channels so long as the channels are selected and displayed on the command line.

Level Wheel

You may set intensity for selected channels using the level wheel. Rolling the level wheel upwards (towards the CIA) increases intensity. Rolling it downwards (towards you) decreases it. The level wheel is a proportional control. Therefore differing intensity settings will maintain their relationship to each other proportionally as the device adjusts the intensity.

For Example:

Assume the following intensity levels are set:

- Channel 1 at Full
- Channel 2 at 50
- Channel 3 at 25

As the level wheel lowers intensity, when:

- Channel 1 is at 50
- Channel 2 will be at 25
- Channel 3 will be at 12.5.

This proportionality is maintained with intensity increases as well.

Manual Control of Non-intensity Parameters (NPs)

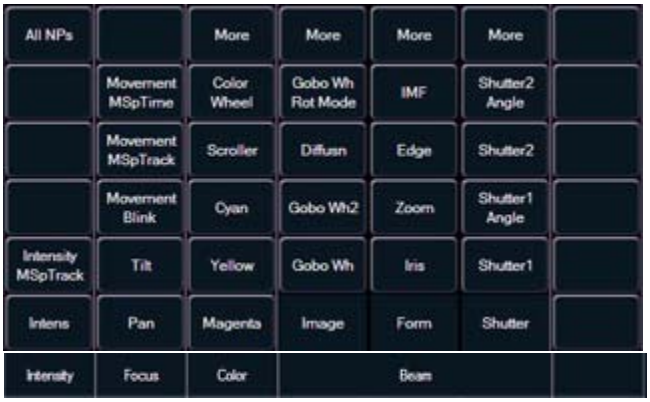
Non-intensity parameters can be set with a variety of controls including the control keypad, buttons on the central information area (CIA) and the encoders.

Parameter Display

The parameter display in the CIA is populated with only those parameters that are found in the patched devices. As channels are selected, the parameter display will change to show only parameters relevant to the selected channels.

The parameters are divided into the following categories: Intensity, Focus, Color and Beam. Each parameter category is represented with buttons at the bottom of the CIA. These buttons allow you to select the entire collection of all parameters within that category in one button press. You can also select a single parameter from a category using that parameter's button in the parameter display.

Beam has three subcategories which correspond to the way the encoders are mapped. They are {Image}, {Form}, and {Shutter}. These subcategories are represented with buttons in the CIA. Pressing these buttons allows you to select all parameters within those subcategories.



Within the CIA, in the upper left corner, notice the {All NPs} button. When pressed, this collects all non-intensity parameters for further editing.

Some examples of using parameter buttons are:

- **[1] {Iris} [5] [Enter]** - Places the iris parameter of channel 1at 50%.
- **[Group] [4] {Zoom} {Edge} [Out] [Enter]** - Sends any zoom and edge values for all fixtures in group 4 to 0%.

Setting Parameters with the Keypad

When the CIA is placed in parameter mode, all parameters of selected channels may be given numeric values through the keypad. Linear devices can be provided instructions from 0 to100, pan and tilt are controlled from -270 to 270 and -135 to 135 respectively. Saturation controls are represented from 0 to 360 and Hue controls are represented from 0 to 100.

When no channels are selected, the CIA shows all of the parameters that are available in the lighting system. When channels are selected, the CIA condenses to show only the parameters that are appropriate to the selection set. If channels are selected that have different device types, such as spot and wash lights, the CIA will show all of the available parameters. Parameters that are not available to all channels are greyed out.

The following examples illustrate how to set parameter values with the keypad:

- **[5] {Iris} [5] {Zoom} [6] [5] {Edge} [5] [Enter]** - sets channel 5 to an iris value of 50%, a zoom value of 65%, and an edge value of 50%.

Setting Non-intensity Parameters with the Encoders

Encoders provide a quick method to adjust current values for non-intensity parameters. The four encoders are pageable using the six encoder page buttons to the upper right of the encoder LCD.

The encoder page buttons consist of: [Focus], [Custom], [Color], [Form], [Image] and [Shutter]. Form, Image and Shutter are subcategories within the broader parameter category of Beam.

- **Focus** - includes pan and tilt control
- **Custom** - allows mapping of up to four user-defined parameters on multiple pages.
- **Color** - includes all color mixing controls (CMY, RGB, HS), as well as scrollers, color wheels and color effects.
- **Form**- includes parameters that affect the quality or size of the light output, such as edge, zoom, iris, IMF, frost, etc.
- **Image** - includes anything that drops into the gate, such as gobos, effects wheels, etc.
- **Shutter** - includes all of the framing devices for the luminaire.

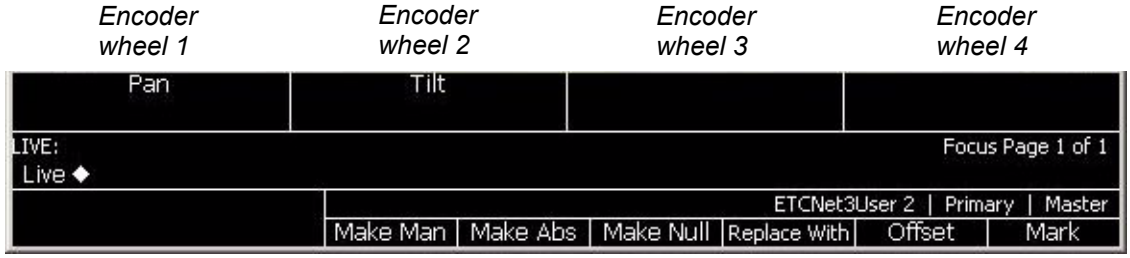
The LCD beneath the encoders indicates the parameters they control and provides additional information about the current status of those parameters. Encoder pages populate with parameters relevant to fixtures in the show patch. When you access a parameter page, controls that are not available for selected channels are hidden from the LCD.

Encoder LCD screen

The encoder LCD displays the active parameter category loaded on the encoders, as selected by the page buttons. Each encoder has an associated control section in the LCD that provides visual indication of:

- the parameter it controls.
- the current setting (value) of the parameter.

For Example:



The above graphic shows the encoder LCD displaying the focus parameters for a moving light.

- Encoder 1 is controlling pan.
- Encoder 2 is controlling tilt.
- Encoder 3 is not assigned.
- Encoder 4 is not assigned.

Pressing a different encoder page key loads the encoders with other parameters of that type (if available).

Encoder paging

The number of pages for each category is displayed at the right of the LCD. You can go directly to the page required by pressing the encoder page button and a page number. For example:

- **{Form} & [3]** - this will take you to the third page of the form category.

Information in the encoder LCD is only as accurate as the patch information for that channel. For example, when you are working with color scrollers, the standard manufacturer color frames will be displayed for scroller controls unless you have created a custom scroll for the selected channel in patch using the Scroll Editor.

When you have created a new scroll or wheel in patch for any channel and that channel is selected, the custom information is displayed in the associated encoder LCD. *See "Creating a new scroll or wheel" on page 70.*

The encoder pages change depending on the channels selected. Below are scenarios to explain some of the possible operating conditions:

- Parameters that are in the show patch but do not apply to the selected channels are suppressed. The parameter name will be displayed in grey, but controls will be withheld as they are not applicable to the selected channel.
- When a group of channels is selected with some parameters that are similar but others that are not, the following will occur:
  - Parameters that are shared by all selected channels are displayed in white, with control provided for all channels.
  - Parameters that are available to some, but not all, of the selected channels are displayed in grey, with all available controls indicated. You may use these controls but the channels that do not support the relative parameters will not respond to the actions.
  - Parameters that none of the selected channels support are displayed grey, with only the parameter name shown.
- When you access a parameter page, the encoder wheels will automatically load and display the first page that has a valid parameter for the selected channels.

Encoder softkeys

If you press the encoder for any parameter, the softkeys change to display options relevant to that parameter. These may include {Home}, {Last} and {Next}, or {Min} and {Max}, and depending on the type of parameter, a {Mode} button.

Home

Each parameter has an associated {Home} key in the encoder LCD. This accesses any parameter and returns it to its default position. Additionally, the control keypad has a [Home] key. The [Home] key on the control keypad is a channel level instruction, meaning the entire luminaire will return to its home position unless you modify the instruction by selecting specific parameters on the CIA.

The following examples illustrate use of these two keys, both from the control keypad and the encoder LCD:

- **{Home}** - when pressed from the encoder LCD, only the associated parameter of the selected channels will return to its home position.
- **[1] {Home} [Enter]** - homes all non-intensity parameters of channel 1. When this command overrides playback data, it results in a manual value for the associated parameters. When this command is an override of only manual data, it returns the parameters to their home position and removes the manual setting.
- **[1] <All NPs> [Home] [Enter]** - homes only the non-intensity parameters of channel 1.
- **[1] {Color} [Home] [Enter]** - homes all of the color data for channel 1.

Min and Max

{Min} and {Max} are displayed when the parameter is linear, such as a shutter. Use these keys to set a minimum and a maximum setting for a parameter.

Next and Last

{Next} and {Last} are displayed when the parameter is segmented such as a fixed gobo or color wheel or a color scroller. Use these keys to increment or decrement in full frames.

Mode

The {Mode} key is provided to select different modes for the encoder wheel such as rotate, index, or special effects.

- When more than two modes are available, the {Mode} key can be pressed repeatedly, advancing through the various modes. Each mode will display beneath the current parameter setting.
- When only two modes are available, the alternate mode is indicated instead of a {Mode} key. Toggling that button switches the encoder wheel to the alternate mode.

Flip

The {Flip} button, available in the Pan/Tilt section of the encoder LCD, is used to flip the unit into its exact same position, but from the other direction.

Multiple Encoder Control

When parameters require more than one encoder for full control, the encoder LCD provides indication that the encoders are related to each other by name. Typically, additional modes will load on other pages but will reference the master parameter unique name. If there are multiple instances of a device in a single channel (such as two fixed gobo wheels or two color wheels, etc.), each device will load onto separate encoders.

Virtual Encoders

You can use the virtual encoder module to view encoder information in a format more similar to Eos. Virtual encoders can be opened on the display and manipulated with the mouse. Color tiles, gobos, and other information can be viewed in the virtual encoder display. Encoder buttons are more readily available to you from the virtual encoders as well.

To use the virtual encoders

Step 1: Navigate to **Browser>Virtual Controls>Encoder**.

Step 2: Select **{Open as Primary Display}** in the CIA options. The virtual encoders will open on the display.

Step 3: Manipulate the actual encoders and view the data available to you on the virtual encoder display.

Step 4: When you are done with the virtual encoders, press **[Live]** or **[Blind]** to return to the normal display.

Form Control

Form (a subcategory of Beam) collects the parameters that affect the quality of the beam, including the iris, edge, frost, etc. ‘Shutter’ and ‘Image’ are the other two subcategories of Beam

When the [Form] encoder page button is selected, the LED will illuminate and the encoders automatically populate with the “Form” parameters as specified in the show patch. If there are more parameters in the show patch than will fit on the first page of the encoders, press the **[Form]** button again to page through the remaining parameters in the category or press [Form] and a page number to jump to a specific page.

The form parameters may include:

- **Edge** - controls the hard and soft qualities of a spot luminaire. While some fixtures may call this parameter “focus”, it is always represented as “edge” in Ion, to avoid confusion with “Focus” which refers to pan and tilt data. The edge encoder provides two buttons, [Hard] and [Soft], which set the selected luminaire to its hardest (sharpest) edge or its softest edge. These values are set to the system default value for the selected luminaire, but may be modified as required on a per fixture basis.
- **Iris**, **Zoom**, **Strobe and IMF**- each parameter has in/out, narrow/wide, or fast/slow settings. Iris and Zoom also have programmable limits, called in/out and narrow/wide respectively. The strobe mode setting varies based on the fixture type.

Image Control

Image is the collection of parameters that affect the contents of the beam (gobo, prism, effects wheel, etc.).

Shutter Control

Pressing the [Shutter] button displays shutter controls, if there are any fixtures with framing devices patched. The encoders control either the “Frame in” parameter or the “Frame Angle” for all available shutters. Use paging to access the other shutters.

- **Frame in**- determines how far in and out of the beam the blade travels.
- **Angle** - determines the angle that the blade sits in the beam.

Different fixtures control shutters in different ways. Ion provides you standardized use of all shutters through patch.

Press the [Shutter] button again to access the additional shutter controls, available to the specific channel.

Color Control

Depending upon the specific device, color can be established manually with the encoders using:

- CMY color mixing
- Hue and saturation color mixing
- RGB color-mixing
- Selection from a color wheel or scroller

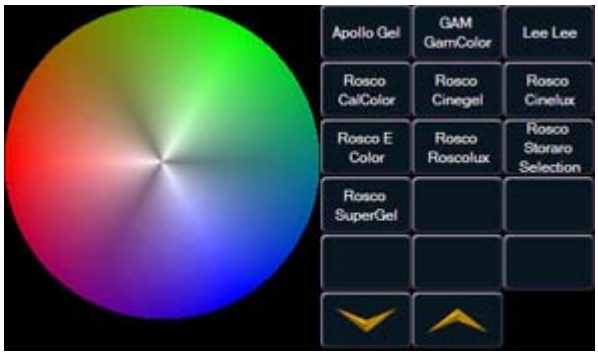
You may also specify color by using the hue and saturation (HS) color picker.

It is also possible to set non-intensity parameter data with direct entry using the control keypad and using the parameters on the CIA.

- **[1] [At] [4] <0> {Cyan} [5] [5] [Enter]**

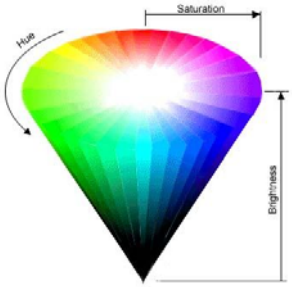
Using the Color Picker

Press the **[Displays]** button and select the **{Color Picker}** from the softkeys to display the color picker in the CIA.



Within the color picker, you will see columns of buttons to the right. These buttons are manufacturer catalogs of gels. To display a specific manufacturer's catalog, press the specific manufacturer or catalog and select the desired gel.

When channels are selected and a specific gel is chosen, the color picker will indicate a dot on the color picker which represents the selected fixture(s). The dot is a visual indication of the color each fixture can accommodate, closest to the gel selected. This tool is most useful when color matching between different fixture types to maintain an even field of color. You can also use a pointing device to select the color from the picker.



What is Hue and Saturation?

Hue is the actual color. It is measured in angular degrees around the cone starting and ending at red = 0 or 360 (so yellow = 60, green = 120, etc.).

Saturation is the purity of the color, measured in percent from the center of the cone (0) to the surface (100). At 0% saturation, hue is meaningless.

Brightness is measured in percent from black (0) to white (100). At 0% brightness, both hue and saturation are meaningless.

Encoders

When both CYM and RGB mixing systems are present in the lighting rig, they take priority in the encoder mapping, followed by fixed wheels, then scrollers. A CMY color mixing fixture may not be placed in RGB mode, nor can an RGB fixture be placed in CMY mode.

- When the mechanism is a fixed color wheel or a color scroller, you can use the encoder to select the desired frame. Pressing the **{E}** expands the display to include a button for each frame indicated with both a location number (example: "#5") and a label (example: "Rosco R80"). The specific colors within the scroller or wheel are specified in patch. *See "Creating a new scroll or wheel" on page 70.*

Home

Ion is equipped with a [Home] hardkey.This hardkey allows you to home a specific parameter. Additionally, you may home all of a channel's non-intensity parameters or home only a specific category (I, F, C, B).

Homing a channel, category, or parameter will return it to the default value.

- **[1] [Home] [Enter]** - homes all parameters for channel 1, except intensity.
- **[1] [Color] [Home] [Enter]** - homes all color parameters for channel 1.
- **[Group] [1] [Color] [Focus] [[Home] [Enter]** - homes the color and focus parameters of all channels in group 1.

Lamp Controls

Lamp controls allow you to execute control functions of selected fixtures such as calibrate, douse lamp, strike lamp, and reset. Each fixture type has its own set of lamp control options which are available to you when you select the fixture from live and press the {Lamp Cntrls} softkey. This information is also available using [About] (see *Using About, page 231*).

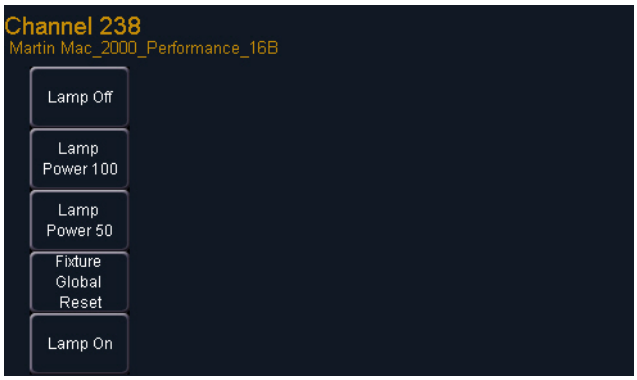
For Example:

- ***[1] [1] [Enter] {Lamp Cntrls}***

-or-

- ***[1] [1] [Enter] [About] {Advanced Control}***

This screen displays any lamp controls associated with the selected channel (this is also the “Advanced Control” subscreen of About). If the channel is a conventional (intensity-only) fixture, no parameters will be displayed. When the selected channel is an automated luminaire, options specific to the fixture type will display for use.



Pressing any of these parameter control buttons will affect the selected channel immediately.

Exit the lamp controls display by pressing **[Displays]**.

Using [+%] and [-%]

Use [+%] and [-%] keys to incrementally change parameter values. By default, the [+%] and [-%] keys are assigned a value of 10. This can be changed in **Setup**. These keys are self-terminating and can be used with any parameter.

Channel Intensity

When channels are selected, pressing **[+%]** increments the intensity level by 10 (or by the value established in setup, see *{Manual Control}, page 86*). Alternatively, you may press **[-%]** to decrement the intensity level by 10. You may use these keys consecutively to “add to” or “subtract from” the intensity level.

For Example:

Select channels 1 through 10 and set them to an intensity level of 45% from the keypad.

- ***[1] [thru] [1] [0] [at] [4] [5] [Enter]***

Change the intensity level to 65% using the **[+%]** key, which is set to its default value of 10% in the setup menu.

- ***[+%] [+%]***

Non-intensity Parameters

The [+%] and [-%] keys may be used to incrementally adjust non-intensity parameters as well.

For Example:

- ***[1] {Iris} [+%] [+%]***
- ***[Zoom] [-%] [-%]***

Remainder Dim

[Rem Dim] temporarily provides a zero intensity to all channels except those that are currently selected, those that are parked, or those with intensity contributions from submasters. If the remainder dim command is reversed, the stage returns to its previous state. You may use the following commands for remainder dim:

- **[Next]** and **[Last]**- moves through the channel list.
- **[**select channels**] [Rem Dim] [Enter]** - sets all non-selected channels to zero
- **[Rem Dim]**- clears the rem dim function and returns the stage to its previous state

Pressing **[Rem Dim]** again releases all channels from rem dim mode and restores the stage to its previous state. Using the [Next] and [Last] buttons releases the current selected channel from remainder dim mode and sets its intensity to zero, while selecting the next or last channel and continuing rem dim operation.

For Example:

Assume channels 5 through 9 are selected and set at an intensity level of 50% and channels 10 through 15 are selected and set at an intensity level of 70%. Select channel 9 and dim the remaining channels.

- ***[9] [Rem Dim] [Enter]***

Channel 9 is set at an intensity level of 50% and all remaining channels are dimmed to zero.

- ***[Next]***

Selecting [Next] changes the channel selection to channel 10 which is set at an intensity level of 70%, the level set in the previous state, and all remaining channels including channel 9, are dimmed to zero.

[Rem Dim] can be used in groups including the use of **[Next]** and **[Last]** buttons to progress through the channels within the selected group.

For Example:

Assume you have group 1 selected (includes channels 1 through 10) with an intensity value of 50%, group 5 selected (includes channels 11 through 20) with an intensity value of 70%, and group 7 selected (includes channels 21 through 30) with an intensity value of 100%

- ***[Group] [1] [at] [5] [Enter]***
- ***[Group] [5] [at] [7] [Enter]***
- ***[Group] [7] [at] [Full] [Enter]***

Select only Group 1 and dim the remaining Groups using the **[Rem Dim]** feature.

- ***[Group] [1] [Rem Dim] [Enter]***

Channels 1 through 10 are selected with an intensity value of 50%, and all remaining channels are at a 0% intensity. You may progress channel by channel through the selected group (Group 1, channels 1 through 10) using the **[Next]** or **[Last]** key. Each press of the [Next] or [Last] key cycles you through only the channels of the selected group.

Using [Next] or [Last] negates the ability to return to the previous stage state by using [Rem Dim].

Sneak

The [Sneak] command (when a destination is not provided) removes manual changes from selected channels and allows the channels to *sneak* back to their background states (cue or submaster instruction, if any).

If there is no background state from the playbacks, the channel parameters will be set to their home position. The sneak command follows the sneak timing defaults established in Setup (see Setup - *{Manual Control}, page 86*), unless a timing value is provided as part of the sneak command.

The sneak command can also be used to send a channel parameter to a specific destination, either with or without timing. The following examples illustrate the various methods of using the sneak command:

- **[**channel list**] [Sneak] [Enter]** - releases manual control, setting parameters to their background state. If there are current values for those parameters from a playback, those are the values that will be restored. If there are no values from a playback, the parameters are set to home (or default) position.
- **[**channel list**] [Color] [Sneak] [Enter]** - sneaks color of the selected channels to the default or background state.
- **[Sneak] [Enter]** - when no channels are selected, restores all channels with manual values to their background state.
- **[Sneak] [Time] [3] [Enter]** - restores all channels with manual values to their background state in 3 seconds.
- **[Select Active] [Sneak] [Enter]** - selects all channels with intensity above zero and restores them to their background state, using default sneak times.
- **[Group] [5] <Color Palette> [9] [Sneak] [Enter]** - selects group 5 and sneaks it to color palette 9 using default sneak time.
- **[Group] [3] [at] <Color Palette> [1] [Sneak] [Time] [7] [Enter]** - selects group 3 and sneaks it to color palette 1 in 7 seconds

Flip

The {Flip} feature is used to invert the pan and tilt values of selected channels to achieve the same focus position from the opposite yoke position. This allows you to correctly focus a fixture that may be at the end of its pan or tilt range or to correct a fade that may be moving in an undesired direction. {Flip} is a softkey in the encoder LCD. To access it, press and hold either the “Pan” or “Tilt” encoder, then press the corresponding softkey.

The following example illustrates the use of {Flip}:

- **[**channel list**] {Flip}**

“Select” Keys

Select Last

The **[Select Last]** key allows you to reselect whatever the previous channel selection was. This includes multiple channel selections, groups, etc.

Select Manual

The **[Select Manual]** key is used to select all channels that currently have manual data. You may use **[Select Manual]** combined with the parameter control keys to capture only certain parameters of a channel with manual data.

The following examples illustrate the various methods to select channels using **[Select Manual]**:

- **[Select Manual] [Enter]** - selects all channels with manual data.
- **[Select Manual] [Color Palette] [1] [Enter]** - selects all channels with manual levels and sets them to color palette 1.
- **[Color] [Select Manual] [Color Palette] [1] [Enter]** - selects only channels with manual color values and sets them to color palette 1.
- **[1] [thru] [1] [0] [0] [Select Manual] [Enter]** - selects channels between 1 and 100 with manual data.
- **[Select Manual] [Record] [Group] [n] Enter]** - records channels with manual data to the target group.

Select Active

The **[Select Active]** key is used to select all channels that currently have intensity levels above zero.

The following examples illustrate the how to select channels using **[Select Active]**:

- **[Select Active] [Enter]** - selects all active channels with intensity levels above zero.
- **[Select Active] [Record] [Group] [x] [Enter]** - records active channels to the target group.
- **[Select Active] [Sneak] [Enter]** - selects all channels with intensity above zero and restores manual control to the background state, using default sneak time, if enabled.
- **[1] [thru] [1] [0] [0] [Select Active] [Enter]** - selects channels between 1 and 100 with intensity levels above zero.

Channel Check

Channel check allows you to quickly step through all of your patched channels. This is useful for checking lamps or checking focus.

Note: *Parked dimmers will not be affected by the channel check feature.*

The following examples illustrates the how to use the channel check feature:

- **[1] [at] [7] <0> {Channel Check} [Enter]** - brings channel 1 to 70% intensity
- **[Next]** - channel 1 returns to its background state and channel 2 is set to 70% intensity.
- **[Next]** - channel 2 returns to its background state and channel 3 is set to 70% intensity.

For Example:

If the command line currently reads:

- ***[1] [at] [5] <0> [Enter]***

You may still place channel 1 in channel check mode even though the command line is terminated. Press:

- ***{Channel Check} [Enter]***

Use [Next] or [Last] to progress through the channel list to complete the channel check. Any other key press other than [Next] or [Last] will terminate channel check mode.

Address at Level

The {Address} softkey in Live (found on the second softkey page), is used to send level information directly to an output address. This allows you to identify a luminaire patched in the system and also to set that luminaire's level independent of what the patch is sending.

- **[More SK] {Address} [5] [At] [Full] [Enter]** - sets output address 5 to full. It will return to its previous level once the command line changes.

After using the {Address} command, [Next] and [Last] may be used to increment the address number and set it to the same level. Addresses return to their previous level once the command line is cleared or [Next] or [Last] is used to increment to the next address.

This feature is useful when you want to perform an address or "dimmer" check.

Using {Move To}

While technically not a manual control instruction, {Move To} will be very useful when managing record target data stored from manual control.

{Move To} allows you to take recorded data of one type from one location and move it to another location. For example:

- ***[Color Palette] [1] {Move To} <Color Palette> [5] [Enter]***
- ***[Preset] [3] {Move To} <Preset> [8] [Enter]***
- ***[Cue] [9] {Move To} <Cue> [2] [Enter]***

When a {Move To} command is given, data is removed from its current location and moved to its new location. Unlike [Copy To], {Move To} does not keep the data in its original location. If the new location already contains data, a confirmation is required by Ion (unless disabled in Setup). Existing data in the new location will be completely overwritten if a {Move To} command is confirmed.

The {Move To} softkey appears when a record target type (cue, preset, palette) is indicated on the command line. Some targets (macros, groups, effects) only have the {Move To} option when viewing in the blind list view.

Chapter 8

Using Groups

Groups are channel selection devices used for fast recall of specific channels. A maximum of 1000 groups can be recorded. Once recorded, they are accessible from the keypad, direct selects, and through the displays.

This chapter contains the following sections:

- ***Recording Groups Live*** 112
- ***Selecting and Recalling Groups*** 113
- ***Group List*** 114

Recording Groups Live

Record groups of channels that you want to have available for fast recall later. Groups can be stored as whole numbers (such as Group 5) or as decimals of tenths or hundredths (such as Group 2.5 or Group 7.65). Only whole number groups can be stored using the direct selects, any decimal designations for groups must be stored using the keypad.

All groups may be labeled. These labels are then displayed on the direct selects as well as in the group list. Group numbers will not display in either until the groups have been created.

The following syntax examples illustrate the various methods and features available when recording groups:

- **[1] [thru] [5] [Record] [Group] [7] [Enter]** - records only channels 1 - 5 to group 7.
- **[Record] [Group] [7] [Enter]** - records all channels with non-default values to group 7.
- **[5] [Thru] [9] [Record} {Group 7}** - records channels 5-9 to group 7 using the direct selects.
- **[3] [Thru] [8] [Record] [Group] [8] [.] [5] [2] [Enter]** - records channels 3-8 to group 8.52.
- **[-] [3] [Record] [Group] [7] [Enter]** - records all channels, except channel “3,” to group 7.
- **[Record] [Group] [7] [Label] [**name**] [Enter]** - records as above and adds a label to the group.
- **[Record Only] [Group] [7] [Enter]** - records channels with manual data to group 7.
- **[Record Only] {Group 7}** - records channels with manual data to group 7 using the direct select.

Ordered Channels

When recording groups, channels are ordered in the group based on their selection order when the group is stored. This ordering is useful combined with [Next] and [Last] functions and when applying effects to groups.

For Example:

If you record a group by selecting channels in the following order:

- ***[1] [+] [3] [+] [5] [Thru] [9] [Record] [Group] [1] [Enter]***

and later you select Group 1 and press **[Next]**, the channels will be accessed, one at a time, in the same order in which they were initially selected.

If new channels are added to an ordered group using an update command, those channels are added to the end of the channel list from an ordering perspective.

When a group is previewed using the group list, the display defaults to showing the ordered view. Channels can be reordered as needed from this list. Use the **[Format]** key to change to a numeric listing of channels. For another example:

- ***[1] [0] [Thru] [2] [Record] [Group] [1] [Enter***

This will record channels 10 through 2 to Group 1, and then if you select the group you can cycle through the channels using [Next] starting with 10, then 9, then 8, and so on.

Offset

You can use the {Offset} softkey to aid in channel selection prior to storing groups. The offset options are {Odd}, {Even}, {Reverse}, and {Random}. For example:

- **[1] [Thru] [9] {Offset} {Odd} [Record] [Group] [5]** - records all odd numbered channels between 1 and 9 to Group 5.
- **[1] [Thru] [2] [0] {Offset} {Reverse} [Record] {Group 3}** - records channels 1-20, in reverse order, to Group 3 using the direct selects.

Editing and Updating Groups in Live

Existing groups can be updated or rerecorded in Live. If you rerecord an existing group, a confirmation is required (unless disabled in “Setup”). By rerecording a group, you *replace* the contents of the group, you do not add to it. Updating a group does not require a confirmation and adds channels to the group, rather than replacing them.

Other editing or updating examples are:

- **[Group] [x] [Label] [Enter]** - clears the label.
- **[Group] [x] [Label] [**name**] [Enter]** - stores a new label.
- **[1] [Thru] [5] [Update] [Group] [n] [Enter]** - adds channel 1-5 to existing Group n.
- For record examples, please see *Recording Groups Live, page 112*.

Selecting and Recalling Groups

Groups may be recalled from the control keypad or the direct selects.

To select a group:

- **[Group] [1] [Enter]** - selects all channels in Group 1
- **[Group] [1] [at] [5] <0> [Enter]** - selects Group 1 and places all channels within at 50%
- **{Group 1}** - Selects all channels in Group 1

If [Next] is used after a group selection, it accesses the first ordered channel in that group. Pressing it again accesses the second ordered channel in that group, and so on. [Next] - used after the last channel in the group - accesses the first channel in the group again.

[Last] may be used with group selects similar to [Next]. Press [Select Last] to reselect the entire group.

Deleting Groups

When you delete a group, the group number and all contents from the Group List Index and direct selects are deleted. Delete commands require a confirmation by default. This can be altered in the default settings. If you disable confirmations, the second enter is not required in the following examples:

Group deletion features include:

- **[Delete] [Group] [5] [Enter] [Enter]** - Deletes Group 5
- **[Delete] [Group] [3] [+] [Group] [5] [Enter] [Enter]** - deletes groups 3 and 5.
- **[Delete] [Group] [3] [Thru] [9] [Enter] [Enter]** - deletes groups 3 through 9.
- **[2] [Delete] [Group] [7] [Enter]** - deletes channel 2 from group 7.

Group List

The group list allows viewing and editing of groups.

You will find that editing groups from the group list is not only easy, but many more features and capabilities become available to you in this display.

Open the Group List

To open the group list you can:

- Press **[Group] [Group]**
- Press **[Blind] & [Group]**
- In the browser, select “Group List” from the **Record Target Lists**

You can navigate within the group list using [Next] and [Last] or by selecting the group you want to work with.

Ordered View and Numeric View

By default, grouped channels will be displayed in ordered view. Therefore, grouped channels will appear in the order they were added to the group (see *Ordered Channels* above). If you wish to view the channels in numeric view, press the **[Format]** key and the view will be switched (channels will appear in numeric order from lowest to highest).

This setting is important in defining next and last functionality within groups in live/blind. If left in numeric format, when using [Next] or [Last] group selection channels will be selected in numeric order. If left in ordered view, they will be selected based on their order of being stored to the group.

Editing Groups from the Group List

An existing group can be modified without the need for recording or updating, as follows.

- Select the required group by pressing **[Group] [n] [Enter]**, or using **[Next]** and **[Last]** to navigate through the list.

The selected group is highlighted in gold and above the CIA command line, “BLIND: Group x” is displayed.

The following actions are now possible:

- **[Label] [**name**] [Enter]** - ads or modifies a group label.
- **[Copy To] [Group] [7] [Enter]** - copies the contents of the selected group to group 7.
- **[2] {Insert Before} [9] [Enter]** - inserts channel 2 into the group, placing it before channel 9 in the ordered view.
- **[2] {Insert After} [5] [Enter]** - inserts channel 2 into the group, placing it after channel 5 in the ordered view.
- **[2] [Delete] [Enter]** - removes channel 2 from, the group.
- **{Random} [Enter]** - rearranges the channels in the group randomly.
- **{Reverse} [Enter]** - reverses the order of the channels within the group.

Chapter 9

Storing and Using Palettes

Palettes are building blocks that can be used to create presets, cues and effects. Palettes are a critical component when using moving lights and can save considerable programming time when editing show data.

This chapter contains the following sections:

- ***About Palettes*** 116
- ***Palette Types*** 116
- ***Storing Palettes Live*** 117
- ***Recalling Palettes*** 120
- ***Editing Palettes Live*** 121
- ***Editing Palettes in Blind*** 122

About Palettes

Palettes are referenced data. This means that when included in presets, cues, or effects, changes to the contents of the palette are propagated into all of the places the palette is stored. Four types of palettes are available; Intensity, Focus, Color, and Beam.

Ion supports up to 1,000 palettes of each of the four types. Palettes are automatically filtered into IFCB categories. Color data cannot be placed in beam palettes, intensity cannot be included in focus palettes, and so forth. This makes the process of creating palettes easier, faster and less work. If you need to create a reference that will include a mix of IFCB information, presets can be used. *See "Storing and Using Presets" on page 125.*

Palette Types

Intensity Palettes

Intensity palettes can easily be created for use with all channels that have intensity parameter data.

Focus Palettes

Focus palettes can be created for all channels that have pan and tilt functions.

Color Palettes

Color palettes can be created for all channels that have any color parameter data. Color palettes store any combination of color data, including CMY, RGB, and HS settings, color scrollers and color wheels.

You will find that [Record Only], filter settings and selective store commands will be very useful when storing color palettes.

Beam Palettes

Beam palettes can be created for all channels that have any beam parameter data. It is rare when storing beam palettes that you will wish to include all of the beam parameters for channels. Therefore, [Record Only], filters and selective store commands will be very useful when storing beam palettes.

Storing Palettes Live

Palettes may be stored in live or blind. There are a variety of methods for determining what data is stored into a palette but [Record], [Record Only] and using filters are the most common ways.

When [Record] is used, Ion will store the relevant parameter category data (intensity, focus, color or beam) for all channels that are not currently at their default value.

[Record Only] is a type of selective store that can be used to store only the relevant parameters that have manual data. Filters and selective storing provide additional methods to control what is stored into a palette.

Storing Palettes with [Record]

The most common method to create palettes is to store them from Live. Palettes can be numbered from 0.01 through 1000 and each can be given a label. [Record] will store the relevant current parameter data for all channels with non-default data for the appropriate palette type, as modified by the filter settings on the front panel.

For Example:

Assume you want to create a custom color using the color picker (for hue and saturation data) or the encoders (for CMY data) and store that data to a custom color palette. First you must select channels.

- ***[1] [thru] [1] [1] [Enter]***

Using the color picker, adjust the hue and saturation levels to the desired look. Or you can use the encoders to set the desired color using CMY color mixing or the gel picker. When the color is selected, store the palette.

- ***[Record] [Color Palette] [4] [Label] <****FOH Blue*> ***[Enter]***

Notice that when you recorded the color palette, all of the color data for channels 1 through 11 is displayed in live with the reference “CP 4”. Because [Record] was used, it stored all of the color parameters for those channels.

When a palette is created, the channels and the parameters involved in the record action are automatically set to the palette reference (“CP 4” in this instance). To view the absolute data for those channels, press and hold the **[Data]** key.

The following methods can be used to store palettes using **[Record]**:

- **[Record] {Color Palette 1}** - stores all color parameter data to color palette “1” and deposits it to the first color palette direct select.
- **[Record] [Focus Palette] [2] [Label] <**name**> [Enter]** - records focus parameter data for all channels not at their default state and adds a label to focus palette “2”.
- **[Record] [Color Palette] [Next] [Enter]** - records data to the next sequential color palette number.
- **[-] [5] [Record] [Beam Palette] [Next] [Label] <**name**> [Enter]** - stores to the next sequential beam palette, withholding the group or channels specified and adds a label.

Selective Storing Palettes with [Record]

Palettes can also be created using selective storing, which allows you to specify only the channels and or parameters that you want to store.

The following examples illustrate various methods of selectively storing palettes using [Record]:

- **[1] [thru] [3] [Record] [Intensity Palette] [2] [Label]** <name> **[Enter]** - records the intensity data for selected channels 1 through 3 and adds a label to intensity palette 2.
- **[Group] [2] [Record] [Beam Palette] [Next] [Enter]** - records the beam parameter data for Group 2 to the next sequential beam palette number.
- **[-] [9] [Record] [Focus Palette] [5] [Enter]** - stores the focus data to focus palette 5, excluding the group or channels specified.
- **[1] [Thru] [9] {Iris} {Zoom} [Record] [Beam Palette] [5] [Enter]** - stores all zoom and iris data for channels 1-9 to beam palette 5.

Note: *When using a selective store, you must specify the channel list to be included or excluded, identified by the [+] [-] modifier, as part of the [Record] command. Otherwise all channels with appropriate non-default data will be stored in the new palette.*

Also, selective storing is useful when you are doing a "one-time" selective store action. If you are recording a series of palettes with only specific parameters, it will save you time to set a record filter (see Using Filters with Palettes, page 119).

Storing Palettes with [Record Only]

[Record Only] is a selective record process that stores only manual parameter data. When used to record palettes, only the manual parameter data for channels will be stored in the palette. As with record, filters can further restrict stored data if they are enabled when using [Record Only]. *See "Storing Palettes Live" on page 117.*

Note: *If you use {Record Only} to record to an existing palette, the data will be added to that palette. The original palette will not be completely overwritten. Only manual changes will be stored to the palette.*

It is also possible to [Update] to add specific changes to the record target. See "Editing Palettes Live" on page 121.

The following methods can be used to selectively store manual parameter data to palettes using [Record Only]:

- **[Record Only] [Color Palette] [2] [Enter]**- records only the manual color parameter data to color palette 2.
- **[Record Only] [Beam Palette] [5] [Label]** <name> **[Enter]** - records manual beam parameter data for all channels and adds a label to beam palette 5.
- **[-] [9] [Record Only] [Color Palette] [Next] [Label]** <name> **[Enter]** - stores to the next sequential color palette, withholding the group or channels specified and adds a label.
- **[**select channels**] [Record Only] [Focus Palette] [2] [Enter]** - stores focus palette 2, but only includes the manual data for the specified channels and parameters.
- **[1] [Thru] [9] {Iris} {Zoom} [Record Only] [Beam Palette] [5] [Enter]** - stores only manual zoom and iris data for channels 1-9 to beam palette 5.

Using Filters with Palettes

Filters can be used to modify what data is stored to a palette by a record action. Active filters will restrict specific parameters or categories from being recorded to a palette.

To filter a parameter:

Step 1: Click the **{Filter}** button in the top-right corner of the parameter grid in the CIA.

Step 2: In the CIA, click the button for the parameter you wish to store.

Step 3: Click the **{Filter}** button again to stop filter selection. “Filter On” appears next to the parameter category label in the CIA.

To determine which parameter is filtered in the category:

Step 1: Click the **{Filter}** button in the top-right corner of the parameter grid in the CIA. All actively filtered parameters are highlighted in grey. You may need to click the arrow button in the grid for that parameter category to page to additional parameters in the category.

Filters are a toggle state. To remove filters, click **{Filter}** and then click the highlighted parameter buttons in the CIA to deactivate the filters.

For more information on filters, see *Using Filters, page 173*.

Recalling Palettes

Palettes may be recalled from the control keypad or from direct selects. When palettes are recalled, all data is manual and will display in red. Recalled palettes are applied only to selected channels, therefore you must select channels before recalling a palette. If a selected channel or parameter has no stored value in the recalled palette, it remains in its current state.

You can select all the channels included in a palette by pressing **[Group] [Palette]** [x] **[Enter]**.

Recalled palettes will appear as manual data for the specified channels. That data will appear as abbreviations of the palette type (IP3 = Intensity Palette 3, FP8 = Focus Palette 8, and so on), or as the palette label as defined in the displays settings (see *Setup, page 79*). To see the numeric values behind any palette (or other referenced value), press and hold the [Data] key.

When palettes are recalled, channels with stored data in the palette will follow that data according to manual time settings. Palettes may also be recalled using the sneak feature (with default sneak time) or a time specified using the [Time] key.

For Example:

Select channels 1 through 8 at intensity level 45 and sneak into color palette 4 over 40 seconds.

- ***[1] [thru] [8] [at] [4] [5] [Color Palette] [4] [Sneak] [40] [Enter]***

You will notice channels 1 through 8 intensity and color parameters sneaking to the required values over a period of 40 seconds.

You may also use groups to recall palettes. For example:

- ***[Group] [1] [1] [Beam Palette] [5] [Enter]***
- ***[Group] [5] {Color Palette 6}***

Palettes may also be recalled from the direct selects which automatically terminates the command line. To recall only specific parameters of a palette, select channels and the required parameters (or those not required, using the [-] key) in the command line.

The following are methods that can be used to recall palettes.

- **[**selected channels**] {**direct select**}** - recalls the associated (IFCB) palette data for the selected channels.
- **[**selected channels**] [Palette] [**n**] [Enter]** - recalls the associated IFCB palette for selected channels.
- **[**Channel List**] {edge} [Beam Palette] [**n**] [Enter]** - recalls only the edge data from the specified beam palette for the selected channels.
- **[Group] [**n**] [Palette] [**z**] [Enter]** - recalls all of the data in the palette and applies it to the selected group.
- **[Intensity Palette] [**y**] [at] [/] [**z**] [Enter]** - recalls the intensity palette for selected channels and sets all recalled intensity values to a proportioned level of their recorded states.

Note: *The above example breaks the referenced link to the intensity palette. To maintain the link, the palette must be recalled without a modified intensity value. Calling back the intensity palette at full will also break this link.*

When recalling palettes, only channels that are selected at the point of recall will be affected by the palette recall. The data recalled from a palette is referenced. To break the reference you must make the data absolute using {Make Absolute}.

Editing Palettes Live

Note: *If a palette is already recorded, [Record] replaces all existing data. [Record Only] is a selective store, therefore it adds data. Recording over a previously existing palette requires a confirmation, if confirmations are enabled in the setup menu.*

It is also possible to [Update] to add manual changes to the record target.

Rerecord

Rerecording follows the conventions illustrated in the [Record] and [Record Only] sections detailed earlier in this chapter. The only exception is that a confirmation is required to record over an existing palette.

For Example:

Color palette 4 has already been recorded. To rerecord color palette 4, adjust the parameter values as needed (you may also adjust the parameters of previously excluded channels in order to add them to palette) then rerecord the palette.

- ***[Record] [Color Palette] [4] [Enter] [Enter]***

Update

Live changes can be updated to both active and inactive palettes. When updating a parameter in an active palette, that parameter releases from manual control and places the contents of the updated palette on stage.

The following illustrates how to update color palette 2 when no cues are active and you have recalled channels within that palette.

- **<**channel list**> [Update] [Color Palette] [2] [Enter]** - any manual changes for channels originally in the palette are updated in color palette 2. Manual data for new channels adds those channels and their data to the palette.
- **[1] [Update] [Color Palette] [2] [Enter]** - adds channel 1's manual data to color palette 2.
- **[-] [3] [Update] {Color Palette 2} [Enter]** - withholds manual changes for channel 3 from the update to Color Palette 2 using the direct selects.

If multiple palettes are active on stage, you can update palettes by specifying channels and the palette you wish to update.

- **[5] [Thru] [9] [Update] {Color Palette 2} [Enter]** - updates color palette 2 with data for channels 5-9.
- **[Update] {Color Palette 2} [Enter]** - updates color palette 2 with all manual color data, regardless of the original palette the data was in.

Editing Palettes in Blind

CAUTION: *When editing palettes in blind, changes to palettes are automatic, therefore no update or record command is required. Be aware that changes made in blind are altering previously stored data without a record command.*

Palettes can be viewed and edited in blind in the summary, table, and spreadsheet views.

Entering Blind Palette from Live

- **[Blind] & [**Palette**]** - pressing this will display the first recorded palette of the selected type (Intensity, Focus, Color or Beam) in blind or return to the last palette of this type viewed in blind.
- **[Blind] {**Palette Select 1**}** *or* **[Blind] [**Palette**] [1] [Enter]** - pressing this will display the specified palette “1” in blind.
- **[Palette] [Palette] {Edit}** - opens the list view of the palette type and then opens blind palette.

View palettes from blind

While in any blind mode, when no channels are selected, you can enter a palette from the command line or direct selects. This will take you into blind channel mode for that palette.

- **[Color Palette] [**n**] [Enter]**

You may also cycle through the available palettes using **[Next]** and **[Last]**.

Editing in Blind

The following are representative methods used for editing palettes in blind:

- **[2] {Iris} [At] [Enter]** - removes the current parameter category setting from channel 2.
- **[1] {Iris} [5] [0] [Enter]** - selects channel 1 and sets iris value to 50.
- **[2] [Copy To] [5] [Enter]**- copies the information from channel 2 to channel 5.
- **[6] [Recall From] [Focus Palette] [1] [Enter]** - recalls the values for channel 6 from Focus Palette 1.

You may use the encoders to set blind levels as well.

When editing in blind, it is possible to remove an instruction from any palette by selecting the channel and parameter and pressing [At] [Enter] or {Make Null} [Enter].

[Recall From] and [Copy To] may be used to create and edit palette data. See *Advanced Manual Control, page 189*.

Editing Palettes in Spreadsheet View

Spreadsheet view shows a range of palettes along the Y axis and channels and channel parameters along the X axis. Viewing palettes in spreadsheet view is useful when you want to compare data between palettes.

You may select a palette from the spreadsheet using the [Next] or [Last] keys to move through the list or you may select the exact palette from the keypad. You may also select a range of palettes to edit at once. You can make changes to the palette(s) by selecting channels and altering parameter values. In addition to normal editing functions, you may also use the following commands in this view: [Copy To], {Make Absolute}, {Make Null}, {Move To}, and {Replace With}.

The following are representative methods used for editing palettes in blind spreadsheet:

- **[Color Palette] [1] [Thru] [9] [Enter]** - selects color palettes 1 through 9.
- **[1] {Scroller} {Make Null} [Enter]** - sets channel 1 scroller value null in the selected color palette.
- **[1] {Scroller} [4] [Enter]** - sets channel 1 scroller value to 40 in the selected color palette.

In addition to the examples given above, here are some examples of the additional palette editing features you have while editing in spreadsheet view:

- **[**palette type**] [1] [thru] [5] {Move To} <**palette type**> [9] <thru> [Enter]** - this will move palettes 1-5 to palettes 9-14 respectively. You do not have to supply the end value for Ion to perform the move.
- **[Beam Palette] [1] [Thru] [5] [Enter] {Iris} [5] [0] {Replace With} <Iris> [2] [5] [Enter]** - for palettes 1-5, this command will replace any iris parameter values of 50 with values of 25. This range editing using [Replace With] can only be done in spreadsheet view.

Editing Palettes in List View

When you press the specific Intensity, Focus, Color or Beam palette button twice, a list view for the associated palette type is opened on a new tab (or brings the list view into focus if already open). You can also open the list view from the browser. *See "Using the Browser" on page 28.*

From the list view, you can select a palette for editing, which changes focus to blind channel view, with the specified palette ready for editing. In addition, you can add palettes to your listing and edit the labels for each palette in the list.

For Example:

In the list view, you can select palettes and relabel or move them.

- ***[1] [5] [Label] <**name**> [Enter]***

While in the specific palette category list view, the {Move To} and {Edit} softkeys are available for use.

To move a specific palette to a different location:

- **[1] {Move To} [3] [Enter]** - moves the contents and label of the specific palette 1 to palette 3. If palette 3 is already used, you will be asked to confirm that you want to overwrite the existing recorded palette.

To copy a specific palette to a new palette:

- **[2] [Copy To] [5] [Enter]** - copies the contents of palette 2 to the new palette 5.

To edit any palette data from the List View:

- **[1] [5] {Edit} [Enter]** - selects palette number 15 and brings the blind display into focus, with palette 15 selected for editing. You can use the [Next] and [Last] buttons to access the other palettes, or select a new palette for editing from the keypad.

Deleting Palettes

To delete color palette 1, press **[Delete] [Color Palette] [**1**] [Enter] [Enter]**. When palettes are deleted, any references in cues will be converted to absolute data.

Chapter 10

Storing and Using Presets

Presets are very similar to palettes in that they are collections of data for specific channels to facilitate cue creation. Presets, however, can collect *all* data for a given channel (intensity, focus, color, beam) rather than just one parameter type.

Up to 1000 presets may be stored in Ion and they can contain absolute data or a mix of IFCB palettes. Presets can *not* refer to other presets.

This chapter contains the following sections:

- ***Storing Presets Live*** 126
- ***Recalling Presets*** 128
- ***Editing Presets Live*** 129
- ***Editing Presets in Blind*** 131

Storing Presets Live

Presets can be recorded live using the keypad or the direct selects. Both [Record] and [Record Only] can be used to record presets, with or without filters. *See "Storing Data with Record Filters" on page 176.*

[Record] will store all channels that are not at their default values, and it will record all information about those channels, including parameters that are still at default. Therefore presets can contain all of the same information as a cue, but they have no timing information or cue attributes (such as follow, delay, or cue overrides). When recorded or rerecorded, presets are automatically recalled on stage. Presets may be individually labeled and each has an optional notes field.

If data *from* a preset is recorded into another preset, when it is recorded it will be changed to either:

- palette data (if it exists in the previous preset)
- or absolute data (if no palette data exists).

Storing Presets Using [Record]

The [Record] key will store all parameter data for channels that are not at their default values, as modified by the filter settings in the CIA. This will store all parameter data that is not default even if it is not manual data. If filters are used, only the parameters enabled by the filters are stored.

When you record data to a preset live, the channels involved in that preset will then actually be in that preset.

The following methods can be used to store presets using **[Record]**:

- **[Record] [Preset] [5] [Label] [**name**] [Enter]** - Records all parameter data for all channels not at default and adds a label to preset 5.
- **[Record] [Preset] [Next] [Enter]** - Records data to the next sequential preset number.
- **[-] [2] [Record] [Preset] [n] [Enter]** - stores the preset, withholding the group or channels specified.
- **[Channel list] [Record] [Preset] [6] [Enter]** - stores the preset, but only the data for the channel list supplied.
- **[Record] & {Preset 8}** - stores the preset to the specified direct select.

Note: *When using selective record, you must specify the channel list to be included (or excluded as the case may be) as part of the [Record] command. Otherwise, all parameters of channels with non-default values will be stored in the preset.*

You may also use the filters and {Make Null} as additional tools to decide what data will be stored. For more information on these features see Using Filters.

When you rerecord an existing Preset, a confirmation will be required, unless confirmations have been disabled in Setup.

Storing presets using [Record Only]

[Record Only] is a selective record process that stores *only manual parameter data*. Therefore, when used to record presets, only manual data for channels will be stored in the preset. As with [Record]**,** filters and {Make Null} can be used to further modify what information is stored. *See "Storing Data with Record Filters" on page 176.*

The following methods can be used to store presets using **[Record Only]**:

- **[Record Only] [Preset] [5] [Label] [**name**] [Enter]** - Records *manual* parameter data for all channels and adds a label to preset 5.
- **[Record Only] [Preset] [Next] [Enter]** - Records manual data to the next sequential preset number.
- **[-] [3] [Record Only] [Preset] [n] [Enter]** - stores the preset, withholding the group or channels specified.
- **[Channel list] [Record Only] [Preset] [6] [Enter]** - stores the preset, but only the manual data for the channel list supplied.
- **[Channel list] {Color} [Record Only] [Preset] [7] [Enter]** - stores only manual color data for the specified channels to the preset.

Recalling Presets

Channels must be selected when recalling a preset. If a selected channel or parameter has no value in the preset, it will stay in its current position. If you want to recall all channels in a preset, you can press **[Group] [Preset] [**x**]**.

If you only want to recall certain parameters of the preset, select channels and enter the required parameters (or those not required, using the [-] key) in the command line (see command examples below).

When a preset is recalled, parameter changes will follow the manual timing defaults, if enabled. Any preset which is contributing to live output from Ion is considered to be “active.”

You may recall presets using any of the following methods:

- **{Preset 8}** - recalls the associated preset data for selected channels.
- **[Preset] [2] [Enter]** - recalls preset 2 for selected channels.
- **[Channel List] [Preset] [2] [Enter]** - recalls the preset data for the channels in the selection list.
- **[**Channel List**] [Color] [Preset] [5] [Enter]** - recalls only the color data from the specified preset for the specified channels.
- **[Color] & {Preset 7}** - recalls just the color data from the specified preset for selected channels.
- **[Group] [Preset] [3] [at] [5] <0> [Enter]** - recalls all channels in preset 3, and sets all intensity values at 50%. The original intensity data is still linked to the preset. If the intensity change is desired you must update the preset to maintain the change and the link, or make the data absolute before storing to another record target.
- **[**Channel List**] [Preset] [7] [Enter] [at] [/] [5] [Enter]** - recalls preset 7 for selected channels. Intensity values will be recalled at 50% of their recorded state. The intensity link is maintained. If the intensity change is desired the user either needs to update the preset to maintain the change and the link, or make the data absolute before storing to another record target.
- **[Group] [Preset] [9] [Enter]** - recalls all channels in preset 9 to their stored preset values.
- **[Group] & {Preset 2}**- recalls all channels in preset 2 to their stored preset values.

Editing Presets Live

There are two ways to edit a preset in Live. You may rerecord the preset or you may use [Update].

Rerecord

Rerecording follows the conventions of [Record] and [Record Only]. The only exception is that a confirmation is required to actually rerecord the preset.

For Example:

Preset 5 has already been recorded. To rerecord Preset 5, recall the preset:

- ***[Preset] [5] [Enter]***

Adjust parameters as needed. You may also adjust the parameters of previously excluded channels in order to add them to the preset. When you are done, rerecord the preset.

- ***[Record] [Preset] [5] [Enter] [Enter]***

Update

[Update] is used to record parameter modifications back to a preset. When updating, you must specify the preset to be updated. You may do this using the keypad or the direct selects.

For the purposes of the following descriptions, assume that there are no active cues on stage. Updating referenced values while cues are active is covered in *Modifying Cues Live, page 149*.

For Example:

To update a preset, first recall the preset for any channels you wish to edit

- ***[1] [Thru] [5] [Preset] [1] [Enter]***

Make required changes to the desired parameters using the keypad or encoders. Once you have achieved the desired look, update the preset.

- ***[Update] [Preset] [1] [Enter]***

or

- ***[Update] & {Preset 1}***

Unless you specify certain channels to be included in the update, all channels with manual data will be included.

Using the Preset List

The preset list displays all recorded presets. List views only allow you to change attributes; no editing can be done directly in list view. Pressing the {Edit} softkey takes you to the blind view of the selected preset, in the last format you used in blind. This will allow you to edit the preset.

You can navigate the preset list using [Next] and [Last].

Opening the Preset List

Blind presets can also be viewed in the preset list and can be accessed in a number of ways.

To view the preset list in blind you may:

- Press **[Preset] [Preset]**
- Click on **Preset List** in the **Browser>Record Target Lists**

Move To

You can move presets within the preset list using the {Move To} softkey.

- **<Preset> [3] {Move To} [8] [Enter] [Enter]** - moves preset 3 to preset 8. Preset 3 will be removed from the list. The second [Enter] is not required if you have disabled confirmations in setup.

Copy To

You can copy presets within the list to another location in the list using [Copy To].

- **<Preset> [2] [Copy To] [9] [Enter] [Enter]** - copies the contents of preset 2 to preset 9. Preset 2 will remain in the list. The second [Enter] is not required if you have disabled confirmations in setup.

Editing Presets in Blind

All presets can be viewed and edited in blind. To open a preset in blind, you can do any of the following:

- Press **[Blind] & [Preset]**
- Press **[Blind] & {Preset** x**}** - opens to the specific preset
- Press **[Preset] [Preset]** and then **{Edit}** when a preset is selected in the list

CAUTION: *When editing presets in Blind, changes to presets are automatically stored. Therefore no update or record command is required. Be aware that changes made in blind are altering previously stored data without a record command.*

You may change the way you view information in the preset list by pressing the [Format] button. This will cycle the preset list through three different views; summary, spreadsheet, and table.

The summary view simply shows information pertinent to the preset you are viewing. You cannot edit presets from the summary view. You may edit presets using the keypad or encoders in either table view or spreadsheet view.

Editing in Table View

Table view shows the data for one preset at a time in a table. Channels are displayed on the Y axis and parameters are shown along the X axis. Viewing presets in the table is useful if you want to see data for numerous channels in one specific preset.

To change which preset you are viewing you may use the [Next] or [Last] keys or you may select the exact preset from the keypad or direct selects. You can make changes to the preset by selecting channels and altering parameter values. In addition to normal editing functions, you may also use the following commands in this view: [Copy To], {Make Absolute}, {Make Null}, {Move To}, and {Replace With}.

Here are some examples of the additional preset editing features you have while editing in table view:

- **[**select channels or parameters**] [Make Abs]** - changes the data for any palette references within the preset into absolute data that no longer references another record target.
- **[**select channels or parameters**] [Make Null]** - removes the data for the specified channel or parameter from the preset.
- **[Preset] [5] {Move To} [Preset] [9] [Enter]** - this will move the contents of preset 5 to preset 9. Preset 9 will be created and preset 5 will be deleted.
- **[Preset] [1] [Copy To] <Preset> [5] [Enter]** - this will copy the contents of preset 1 to preset 5. You may also copy ranges of presets to new locations.

Editing in Spreadsheet view

Spreadsheet view shows a range of presets along the Y axis and channels and channel parameters along the X axis. Viewing presets in spreadsheet view is useful when you want to compare data between presets.

You may select a preset from the spreadsheet using the [Next] or [Last] keys to move through the list or you may select the exact preset from the keypad. You may also select a range of presets to edit at once. You can make changes to the preset(s) by selecting channels and altering parameter values. In addition to normal editing functions, you may also use the following commands in this view: [Copy To], {Make Absolute}, {Make Null}, {Move To}, and {Replace With}.

In addition to the examples given above in table view, here are some examples of the additional preset editing features you have while editing in spreadsheet view:

- **[Preset] [1] [thru] [5] {Move To} <Preset> [9] <thru> [Enter]** - this will move presets 1-5 to presets 9-14 respectively. You do not have to supply the end value for Ion to perform the move. If presets 9-14 already exist you will be asked to confirm this move.
- **[Preset] [1] [Thru] [5] [Enter] {Iris} [5] [0] {Replace With} <Iris> [2] [5] [Enter]** - for presets 1-5, this command will replace any iris parameter values of 50 with values of 25. This range editing using [Replace With] can only be done in spreadsheet view.

Deleting presets

You may delete presets in the following ways:

- **[Delete] [Preset] [1] [Enter]**
- **[Delete] [Preset] [1] [Thru] [5] [Enter]**

Presets can be deleted from any screen, at any time. A confirmation is required to delete, unless confirmations have been disabled in Setup.

Removing channels from a preset

You can remove specific channels from a preset. This can only be done from blind.

For Example:

Open the preset in blind:

- ***[Blind] & [Preset]***

Select the preset you wish to edit:

- ***[Preset] [5] [Enter]***

Remove channels by pressing:

- ***[2] [+] [4] [+] [6] [Thru] [9] [At] [Enter]***

Or you can remove a specific channel parameter from the preset by pressing:

- ***[5] [+] [7] {Color} [At] [Enter]***

You may also remove a channel or parameter from a range of presets by pressing:

- ***[Preset] [1] [Thru] [5] [Enter] [1] {Color} [At] [Enter]***

Chapter 11

Working with a Single Cue List

When cues are created they are stored in a cue list. By default, recording cues will result in a single cue list, identified as cue list 1. While other cue lists can be recorded in Ion, this chapter deals primarily with working in a single cue list. For more information on multiple cue lists, see *Working with Multiple Cue Lists, page 165*.

This chapter contains the following sections:

- ***Basic Cueing*** 134
- ***Recording Cues in Live*** 135
- ***Timing*** 139
- ***Flags*** 146
- ***Modifying Cues Live*** 149
- ***Recording and Editing Cues from Blind*** 155
- ***Deleting Cues*** 158

Basic Cueing

A cue is a record target comprised of channels with associated parameter data, discrete (channel or parameter level) timing, and cue attributes (such as hold times, follow instructions and so on). Cues are stored with this information for later playback in a fader during your show.

In **Setup**, you have determined if Ion will operate in a Cue Only or Tracking mode. By default, the system is set to tracking, therefore this section of the manual primarily addresses working in tracking mode. It is important to know which mode you are working in, as it impacts how cues are edited.

- If your console is set in Track mode (default), changes move forward through the cue list until a block or a move instruction is encountered.
- If your console is set in Cue Only mode, changes to cues have no impact on subsequent cue data.

Cue Numbering

Cues can be numbered from .01 - 10,000. By default, cues are stored into cue list 1. You may also label each cue for reference.

Ion provides you with multiple ways to number your cues. The most common methods are listed below:

- After pressing record, enter a cue number which can be a whole number (1) or a decimal number (1.1).
- After pressing record, rather than entering a cue number you may press [Next], which will automatically number the cue with the next sequential number in the cue list. For example, the current cue is numbered cue 1.1, pressing [Record] [Next] will automatically number the new cue 1.2.
- When recording decimal cues, it is not necessary to specify the leading cue number if a decimal cue has already been recorded. For example, if the current cue is numbered 5.2, when you enter the next record command, you can just enter [.] [5] to record cue 5.5.
    - Whole numbered cue - [Next] increments the next whole numbered cue.
    - Tenths numbered cue (.1) - [Next] increments in tenths.
    - Hundredths (.01) numbered cue - [Next] increments in tenths.

Recording Cues in Live

When using [Record], all parameters of any lights that have non-default values, either from manual control, other cues, or submaster playback are stored in the target cue.

Channels that have all default values, meaning they have never been changed, are not included in the record action, unless you specifically select the channel and press {Make Manual}. Other possible exclusions are parameters withheld by use of filters, or if the channel parameters have a null flag applied (see *Using Filters, page 173*). You can also select individual parameters (such as Cyan and Iris) and place them in a null state using the {Make Null} button if the values are not needed in the cue you are recording.

Ion is a tracking console, meaning once something is recorded into the cue list, the cue list will always contain information about that channel or parameter unless it is nulled, using the {Make Null} command, or filtered using the parameter filters.

When cues are recorded they are automatically played back and manual values are released, unless auto playback on record has been disabled in setup. Upon playback, displayed parameter levels will be color coded for clarification of the record action:

- Blue - intensity has increased from the previous cue or a non-intensity parameter has changed.
- Green - intensity level has decreased from the previous cue or a non-intensity parameter has marked.
- Magenta - level has tracked from a previous cue.
- White - level has been blocked (see *Block, page 146*).

Using Record

When the [Record] button is pressed the keypad defaults to cue mode; use of the [Cue] button is optional. The following are representative examples of recording cues in Live. Once the cue record has been specified, cue attributes such as timing can be combined and entered in any order you wish.

- **[Record] <Cue> [5] [Enter]** - records all parameters of any channels with non-default data into the specified cue number 5, as modified by the function filters.
- **[Record] <Cue> [5] [Label] [**name**] [Enter]** - records the specified cue and provides an alphanumeric label.

Using Record Only

[Record Only] is similar to [Record] except that it selectively stores only manually set values, preventing unwanted levels (such as from a submaster or another cue list), from being recorded into the cue. Therefore, when used to record a cue, only the manual data for channels and parameters will be stored in the cue.

All of the same commands used for [Record] may also be used for [Record Only].

- **[Record Only] <Cue> [Next] [Enter]** - stores only the manually set values into the next cue in the list.
- **[Record Only] [Cue] [3] [Enter]** - stores only the manually set data into cue 3.
- **[2] [thru] [8] [Record Only] <Cue> [9] [Enter]** - stores only the manually set data for channels 2 through 8 into the target cue 9.
- **[Group] [2] [Record Only] [Cue] [5] [Enter]**- stores only the manual data from group 2 into cue 5.
- **[**selected channels**] {Color} [Record Only] <Cue> [4] [Enter]** - stores only the color data for the selected channels into cue 4.

As with [Record], filters can further restrict stored data if deployed when using [Record Only]. *See "Using Filters" on page 173.*

Using Selective Store

You may use the [-] button to withhold information from a cue or use the [+] button to specify a particular channel or parameter to be included in the record action. These actions are both selective stores.

For information on a selective store using filters see *Partial Filters, page 175*.

Using a Positive Selective Store

You may record only specified parameters into cues. If the cue has already been stored, this action adds the specified channel parameters to the existing cue data.

To record only specific channels into a new target cue:

- **[1] [thru] [5] [Record] <Cue> [4] [Enter]** - this records only channels 1 through 5 into cue 4.

To record only specific parameters into a target cue:

- **[1] [thru] [5] [Focus] [Color] [Record] <Cue> [4] [Enter]** - records the focus and color data for channels 1 through 5 into cue 4. Any other data on stage would not be stored in the target cue.

Using a Negative Selective Store

It is possible to withhold data from a cue by using the [-] key as follows:

- **[-] [Group] [3] [thru] <Group> [6] [Record] <Cue> [9] [Enter]** - records the specified cue, with the exception of any channels associated with groups 3 through 6.
- **[-] [3] [thru] [6] [Record] <Cue> [9] [Enter]** - records the specified cue, with the exception of channels 3 through 6.
- **[-] [Sub] [7] [Record] [Enter]** - records the selected cue, without the input from submaster 7.
- **[-] [Sub] [Record] [Enter]** - as above, except withholds the contents of all submasters.

Using [Cue Only / Track]

In Track Mode

When you create a new cue, any channel parameter data from the previous cue is tracked into the new specified cue. The [Cue Only/Track] key is an applied exception to the tracking mode system setting. When you record a cue in the middle of an existing cue list, using the [Cue Only] button will prohibit new information from tracking into the subsequent cue.

Note: *In the following examples, the command **[Cue Only]** indicates the same key hit of [Cue Only/Track] which is a single button on the keypad. The system setting determines the actual context of the button depending on the mode in which the system is operating.*

For clarity, only the contextual function of the button is used in the examples.

With system set to "Track"

- **[Record] <Cue> [5] [Cue Only] [Enter]** - records cue 5. New values or changes will not track into the subsequent cue.
- **[-] [Color] [Record] <Cue> [5] [Cue Only] [Enter]** - as above the recorded data will not track forward and all color data is excluded from the record operation.
- **[Record Only] <Cue> [5] [Cue Only] [Enter]** - records all manual data, but doesn't allow it to track into subsequent cues.
- **[-] [5] [Record] <Cue> [6] [Cue Only] [Enter]** - records the specified cue, except the contributions from channel 5. The stored data will not track forward in the list.

In Cue Only Mode

When you create a new cue, any channel parameter data from the previous cue is tracked into the new cue. The [Cue Only/Track] key can be used as an applied exception to the cue only/track system setting.

Note: *In the following examples, the commands **[Track]** indicate the same key hit of [Cue Only/Track] which is a single button on the keypad. The system setting determines the actual context of the button depending on the mode the system is operating.*

For clarity, only the contextual function of the button is used in the examples.

With system set to "Cue Only"

- **[Record] <Cue> [5] [Track] [Enter]** - records cue 5. This data will track forward in the list until the next move instruction or block.
- **[-] [5] [Color] [Record] <Cue> [6] [Track] [Enter]** - records the specified cue, except the color data from channel 5. The data will track forward in the list until the next move instruction or block.
- **[Record Only] <Cue> [2] [thru] [7] [Track] [Enter]** - stores all manual data. The stored data will tracks through 2 and stop at cue 7.

Timing

Cue timing can be applied in a variety of ways. At a cue level, timing categories are provided for intensity up, intensity down, focus, color and beam transitions. Each of these times can have an associated delay. Timing can also be applied directly to a channel or a specific parameter. This is called discrete timing.

Time can be entered in minutes and seconds (example 10:15), or seconds and tenths of seconds (example 1.3), or 100ths of seconds (example 1.35) with valid fade times from zero to 99.59. When no time is applied at a cue level, the defaults established in **System Setup** are used. *See "Setup" on page 79.*.

Setting Cue Level Timing

Unless you specify otherwise, Ion assigns default fade times to any cue you record. Default timing is designated in Setup. Cue level timing can be applied when a cue is recorded or can be added or modified later.

Following are some examples of record commands with cue level timing:

- **[Record] <Cue> [5] [Time] [9] [Enter]** - puts a time of 9 seconds on all parameter timing categories.
- **[Record] <Cue> [5] [Time] [2] [Enter]** - specifies the up and down fade time for all intensity transitions of the cue. When editing a cue, if you had programmed split (different) up and down fade times, this command would change the up fade only.
- **[Record] <Cue> [6] [Time] [3] [Time] [9] [Enter]** - specifies the intensity up, focus, color, and beam times at 3 seconds and the down time at 9 seconds. The first instance of [Time] is used for intensity up fade (meaning intensity value is fading to a higher level than is currently set) and the second instance of [Time] is used for intensity down fade time (intensity values fading to a lower level than is currently set).
- **[Record] <Cue> [2] [Time] [Enter]** - resets intensity time to default value. If the cue is recorded with split time, this command only resets the upfade time.
- **[Record] <Cue> [2] [Time] [Time] [Enter]** - resets the down intensity time to the default value.

Note: *If a cue is provided split fade times with no delay on either side, and those times are later the same values, the split time is cleared.*

Manual Timing at a Cue Level

It is possible to assign a time of “manual”, for manual parameter transition through the associated fader. Manual times are assigned by using the {Manual} softkey that is displayed when recording a cue and they can be applied to any parameter.

- **[Record] <Cue> [4] [Time] {Manual} [Enter]** - applies a manual intensity time. If the cue had previously been given split times, would apply a manual to the upfade. If the cue had a single time, both the up and down would be “manual” and controlled by the fader.
- **[Record] <Cue> [4] [Time] [Time] [Manual] [Enter]** - applies a manual intensity time to the downfade. If there was an upfade time for this cue, this command does not change the upfade time.
- **[Record] <Cue> [4] {Color} [Time] [Manual] [Enter]** - applies a manual time to any color data changes in cue 4.

Non-intensity Parameter Category Timing

Timing can also be applied for focus, color, and beam parameter categories at a cue level. If no time is applied at a cue level, the defaults established in setup are used.

When you apply a time to an individual parameter category and that category has no movement, the time is displayed in grey. The specified timing will remain in grey until that category is provided with a move instruction, at which point it the timing will display in white.

- **[Record] <Cue> [2] [Color] [Time] [7] [Enter]** - records cue 2 with a cue level color time of 7.
- **[Record] <Cue> [2] [Time] [Time] [Time] [7] [Enter]** - records cue 2 with a cue level focus time of 7. In this example, each press of the [Time] key steps through each timing value (up time, down time, focus time, color time and beam time.
- **[Record] <Cue> [2] [Time] [7] [Enter]**- records cue 2 and puts a time of 7 on all parameter categories.

Note: *It is not necessary to rerecord a cue to alter stored timing data. You can simply redefine the time by specifying the cue and re-entering the time value(s).*

- ***[Cue] [5] [Time] [8] [Enter]** - Redefines the all category times to 8 seconds.*
- ***[Cue] [2] {Color} [Time] [5] [Enter]** - Redefines color time to 5 seconds.*

Delay Time

Delay is used to delay a move instruction from being executed. The countdown of a delay time begins the moment the cue is executed (for example, pressing [Go]).

Delay times can be added to any cue or to any specific parameter category within the cue, which will postpone the parameter transition until the delay time has elapsed.

Following are some examples of recording with a delay:

- **[Record] <Cue> [2] [Delay] [5] [Enter]** - stores cue 2 with a 5 second delay on intensity.
- **[Record] <Cue> [2] [Time] [9] [Delay] [3] [Enter]** - records cue 2 with a 9 second upfade, delayed from activation by 3 seconds.
- **[Record] <Cue> [2] [Time] [7] [Delay] [Enter]** - records cue 2 with a 7 second upfade, and removes a delay time on the upfade.

Delay can be useful when you do not want a parameter to change (i.e. intensity up) until other changes have begun or completed their transition (i.e. a color scroller has reached the proper color). Delay can be used to affect only the parameters in the specified category.

- **[Record] <Cue> [2] [Color] [Delay] [8] [Enter]** - records cue 2 with a delay time of 8 seconds for the color category.

You can set all categories to the same delay time with the following command structure:

- **[Cue] [2] [Delay] [Thru] [8] [Enter]** - records cue 2 and applies a delay time of 8 for all parameter categories.

Note: *It is not necessary to rerecord a cue to alter stored delay data. You can simply redefine the delay by specifying the cue and re-entering the time value(s).*

- **[Cue] [5] [Delay] [8] [Enter]** - redefines the delay to 8 seconds.
- **[Cue] [2] {Color} [Delay] [5] [Enter]** - redefines color delay to 5 seconds.

Discrete Channel or Parameter Timing

Discrete timing can be applied to a specific channel or parameter. When using the control keypad, you must select the channels that you want to apply the time to, otherwise the system assumes you are addressing the selected cue.

Following are some examples of use:

- **[**channel list**] [Color] [Time] [3] [Enter]** - adds a time of 3 seconds to all of the color parameters of the channel list that have a move instruction.
- **[Frost] [Time] [7] [Enter]** - assigns a time of 7 seconds for the frost attribute of all selected channels.
- **[Select Manual] [Frost] [Time] [7] [Enter]** - selects channels with manual data and applies a time of 7 to any manual frost values.

Discrete delay times can also be placed on a channel parameter.

- **[1] {Color} [Time] [4] [Delay] [3] [Enter]** - places a time of 4 seconds and a delay of 3 seconds on all color parameters of channel 1.

When timing has been applied to a channel parameter in live, a small red “t” will be displayed with the channel. This indicates the timing must be stored or updated to the required cue. When this is done, the “t” is displayed in blue. In the Playback Status Display, a “+” is displayed in the associated parameter category time field, indicating that not all of the parameters in the cue will use the cue timing. The [Time] navigation key (near the [Data] key) can be held down to see the discrete delay or time information for channels in Live/Blind. Delay is displayed first, followed by the timing value.

Assigning Cue Attributes

You can record cues with specific attributes to affect how cues behave when executed. Cue attributes include follow time, hang time, link, loop, curve, rate and label. Cue attributes can be entered when the cue is initially recorded, or they can be added or modified at a later date.

Follow/Hang

A follow time creates an auto-follow which automatically activates the next cue in the sequence when the follow time of the associated cue has elapsed. The follow time begins counting from the moment the cue is executed.

The hang time is also an auto-follow, but rather than counting from the moment the cue is executed, it is calculated from the completion of the cue. You can assign a negative value to a hang time, allowing a subsequent cue to overlap an active cue.

You can assign either a follow time or a hang time, but not both. Both features are accessed using the [Follow/Hang] key on the console. Following are some examples of use:

- **[Record] <Cue> [5] [Follow/Hang] [8] [Enter]** - records cue 5and provides a “follow” time of 8 seconds which impacts the start of the next cue in the list. The following cue will automatically initiate on the same fader when the follow time has elapsed. The follow time will begin counting down when the associate cue is executed.
- **[Record] <Cue> [5] [Follow/Hang] [Follow/Hang] [8] [Enter]** - records cue 5 and provides a “hang” time of 8 seconds which impacts the start of the next cue in the cue list. The following cue will automatically initiate on the same fader when the hang time has elapsed. The hang time will begin counting down when the associated cue is complete.

To remove a Follow/Hang time:

- **[Cue] [x] [Follow/Hang] [Enter]**

Link/Loop

Link allows cues to be run out of sequence, by causing a different cue number to be loaded into the pending file of the playback fader when the cue that carries the link instruction is activated. If a follow or hang time is included with the cue attributes, the activation of the linked cue will occur when the follow or hang time has elapsed. The link can be within the cue list or to a cue in another cue list.

Following is an example of using link:

- **[Record] <Cue> [2] [Link/Loop] <Cue> [8] [Enter]** - records the specified cue 2 and provides a link to cue 8 in the cue list. When cue 2 is played back, the linked cue is loaded into the pending file of the associated fader.

Loop is provided as a method to link a series of cues and loop them a number of times in a sequence. Once the sequence of cues has played back the first time, the system recognizes the loop command and plays the sequence again.

If the first cue in the sequence is a blocked cue or a cue with an assert attribute, values from the last cue are not allowed to track through into the first cue when it is looped back. But without a move, block or assert in the first cue, values from the last cue will track into the first cue when it loops back. A loop specified with “0”, loops the sequence indefinitely.

Following is an example of using loop:

- **[Cue] [2] [Link/Loop] <Cue> [1] [Link/Loop] [3] [Follow] [4] [Enter]** - records a link from cue 2 back to cue 1. Because there is a follow time, cue 1 will automatically trigger 4 seconds after cue 2. If cue 1 also has follow time, it will automatically trigger cue 2. This sequence will run 4 times (once plus 3 loops) and then stop in cue 2. The loop value specifies the number of times the loop instruction will be performed. Since the sequence has run once prior to the loop command, the total number of passes will be the specified number of loops +1.

Rate

The {Rate/Hold} softkey can be used to apply a rate adjustment to all timing in the cue. The default rate is 100%, which is real time. To slow a cue down, set the rate below 100%, to speed the cue up, set the rate above 100%. The range rate for a cue is 0 - 2000%. A timing value of 5, with a rate of 50% will replay in 10 seconds. A timing value of 5, with a rate of 200% will replay in 2.5 seconds.

Following is an example of using rate:

[Record] <Cue> [4] [Rate/Hold] [1] [2] [5] [Enter] - records the specified cue, and places a rate override instruction on all timing values. The cue would now be played back at 125% of recorded time values.

Note: *You can use the playback rate override function to determine the rate at which you want to play the cue back, and then apply that rate to the cue. This eliminates the need to adjust all of the timing in the cue if you only need to speed it up or slow it down.*

Hold

A hold instruction at a cue level indicates that any parameters with manual timing are not to be released from the manual potentiometer when the cue is complete. If there are no manual times, a hold indicates the intensity values are to be held on the fader. The hold attribute will release on a subsequent cue activation.

Following is an example for use of a hold instruction:

- **[Record] <Cue> [3] {Rate/Hold} {Rate/Hold} [Enter]** - records cue 3 and places a hold instruction on playback.

Label

[Label] is used to attach an alphanumeric label to a cue or cue part.

Following is an example of how to apply a label to a cue:

- **[Record] <Cue> [7] [Label] <**name**> [Enter]** - records cue 7 and applies the label as entered on the alphanumeric keyboard.

Clearing Cue Attributes

To clear attributes from a cue:

- **[Cue]** [n] **[Follow/Hang] [Enter]** - removes the follow or hang time from the specified cue “n”.
- **[Cue]** [n] **[Label] [Enter]** - removes the label from the specified cue “n”.
- **[Cue]** [n] **[Link/Loop] [Enter]** - removes the link instruction from the specified cue “n”.
- **[Cue]** [n] **[thru]** [y] **[Rate] [Enter]** - removes the rate instruction in cues “n” through “y”.
- **[Cue]** [n] **[Rate/Hold] [Rate/Hold] [Enter]** - removes the hold instruction from cue “n”.

You may combine these to remove multiple attributes at once:

- **[Cue]** [n] **[Follow/Hang] [Link/Loop] [Enter]** - removes the follow time and link instruction.

Flags

Flags can be applied to cues to change specific behaviors. Flags can be set for “AllFade”, “Block”, “Assert”, and “Mark”.

Block

You can apply a block to a cue, to any channel (or group of channels), or parameter (or group of parameters) within a cue.

At a cue level

A cue level block causes all tracked values in the cue to be treated as move instructions, which prohibits any data changes from tracking into the cue. Parameters that are not included in the cue are not impacted by the block instruction.

Blocks do not protect a cue, channel or parameter from being modified by a range edit, nor are they protected from a trace instruction (see *Using Trace, page 154*). It is assumed that if you use the trace instruction, then you really want the initial value to change. A block will stop the trace from moving any further backwards through the cue list.

Ion also supports an “auto-block” function. Auto-block can protect your cue data from unwanted changes. For example, in cue 5 you set channel 1 to 50%. It is stored as a move instruction. Then, you later go back to an earlier cue and set channel 1 to 50% and it tracks forward to cue 5. Channel 1 will be “auto-blocked” in cue 5. Even though it is now at the same value as the previous cue, the original concept of a move instruction is maintained. Auto-block can be disabled in setup. If auto-block were disabled, in the above example, channel 1 in cue 5 would be converted to a tracked value of 50%.

Blocks that you have applied will display parameter data in white. Auto blocks are displayed in white, with a white underscore.

- **[Cue] [5] [Block] [Enter]** - “B” is displayed in the flags field, indicating a cue level block. When this cue is recalled, all data that would otherwise appear as a tracked value, will be displayed in white. Any changes upstream in the cue list will not impact this “blocked” cue data.

At a Channel or Parameter Level

Blocks can also be applied to a channel or a channel parameter. This can be done in live or blind. When applied in live, the block instruction must be stored or updated to the appropriate cue.

- **[9] [Block] [Enter]** - applies a block to channel 9. A red “B” appears near the channel in the live display, indicating a block has been applied but is not yet stored.
- **[Group] [5] [Color] [Block] [Enter]** - applies a block to all of the color parameters for group 5.

When the block instruction has been stored or updated, any tracked values the block was applied to will be displayed in white.

Channel level blocks and auto-blocks are indicated in the cue list by a “b”.

Assert

Assert is only used when working with multiple cue lists. See the next chapter, *Using Assert, page 167*.

AllFade

Any cue can have an allfade flag applied. An allfade sends the intensity for all channels not included in the cue to zero. Submasters, any captured channels and the contribution from any faders that are set to independent are unaffected, unless the cue executing the allfade is also set to independent. An allfade flag "*" is identified in the playback status display for the specified cue.

- **<Cue> [5] [Allfade] [Enter]** - sends intensity for all channels not included in the allfade cue to zero.

The allfade instruction is useful as a quick cleanup, to get back to a known state on stage, without having to worry about what channels need to be set to zero.

Mark

The Mark flag is used to relay information about either automarks or reference marks. When using automarks, an "M" will display in the flags field for the specific cue that will execute an automark. A "D" is displayed when automark has been disabled for a cue.

When using reference marks, an "M" will display in the flags field for any cue that will execute a referenced mark. An "R" displays when a cue is the source of a mark. *See "Using Mark" on page 159.*

Preheat

Preheat can be used to warm filaments with a preheat intensity in the cue immediately preceding an intensity upfade from 0. Preheat values can be assigned channels individually in patch (see *{Attribute} Display and Settings, page 64*).

Preheat is assigned on a cue basis and, if assigned, any channel in that cue with a preheat intensity assigned in patch, will fade to that intensity in the cue immediately preceding the cue with the preheat flag. Cues with a preheat flag will display an "O" in the preheat flag column (indicated by a "P" at the top of the column).

Channels that set to a preheat value in the previous cue will display a "Ph" in the intensity field of that channel.

Using the Execute List

The execute list can be used to trigger actions on other faders, as well as macros. Additionally, you can enter instructions that sync the “Go” of other cue lists.

When you press {Execute}, a dialog box appears. This provides a list of the available analog triggers and MIDI triggers. Also, fields are available to enter specific data relating to the macro, cue number and cue list that you wish to execute.

Entering macro, cue number and cue lists can be done directly from the command line or you can navigate the dialogue box to enter the data.

To trigger a macro:

- **[Cue] [1] {Execute} [Macro] [5] [Delay] [7] [Enter]** - triggers Macro 5, seven seconds after cue 1 is executed. If you had not specified a delay, the macro will execute as soon as the cue is executed.

To trigger cue lists press:

- **[Cue] [1] {Execute} {Cue} [4] [/] <+> [6] [/] [Enter]**
- **[Cue] [1] {Execute} {Cue} [2] [/] [thru] [5] [/] [Enter]**

When cue list triggers are set, the system will automatically execute same numbered cues on the associated cue list. For example, assume that the last instruction above was applied to cue list 1, cue 1. When cue 1/1 is executed, any cues numbered “1” in cue list 2 thru 5 will be executed accordingly. If there is not a cue 1 in those lists, no action is taken on them. If there are cue numbers on secondary cue lists that are not in cue list 1, those cues are skipped and the subsequent cue taken as an “out of sequence” cue when triggered.

Therefore, it is valuable to create dummy cues in the master cue list if needed, to ensure that no cues on the secondary cue lists are skipped.

The “auto-execute” function can be turned off using the dialogue box. When this is done, the “Execute List” field shows “Auto-Execute Off” in the attribute line for the cue that turns it off.

Removing a trigger:

To remove a trigger, access the cue number and press [Execute], the record target type and press [Enter].

- **[Cue] [5] {Execute} {Cue/Macro} [Enter]**

Modifying Cues Live

Recorded cues can be modified live. Cue attributes (such as link, loop, label and so on) may be edited as well. The cue does not need to be active (played back) to change cue attributes. You may also change cue attributes for a range of cues if you wish.

Using [At] [Enter]

A useful feature when editing cues is [At] [Enter]. This is a simple feature which allows you to select any channel or parameter, or several of them, and remove their move instructions, allowing the value from the previous cue to be manually recalled.

[At] [Enter] is essentially a “recall from the previous cue” command; it completely removes a move instruction and any manual data, and replaces it with the value from the previous cue.

For Example:

Cue 5 is active in Live.

- ***[Group] [1] [Focus] [At] [Enter]***

This command lifts the current move instructions for Group 1 focus, and recalls the focus data for those lights from the immediately preceding cue. It is now manual, and can be stored or updated as required.

You may also use [At] [Enter] to affect only certain channels or parameters by selecting them specifically:

- **[2] [At] [Enter]** - this will remove the changes for channel 2 only.
- **[2] [Color] [At] [Enter]** - this will remove only the color data changes for channel 2.
- **[2] [Thru] [5] [+] [9] [+] [1] [1] [Thru] [1] [5] [-] [1] [2] [-] {zoom} [At] [Enter]-** removes the changes for only the selected channels for all parameters except zoom.

Using Record

You may modify a cue by rerecording it entirely. After making changes to channels or parameters:

- **[Record] [Enter] [Enter]** - will replace any data in the active cue with the current stage settings.
- **[Record] [Cue] [x] [Enter] [Enter]** - will replace the any data in cue “x” with the current stage values.

Note:

Using [Record] will record all parameters of all non-default channels onstage. This means that all other cue data and submaster data will be included in the record action.

This is the normal method when working with a single cue list. When working with multiple cue lists or submasters, [Record Only] is a useful tool.

Using Record Only

Modifying existing cues using [Record Only] is considered a “selective store” function. As such, it adds or modifies only manual data to the target cue, but leaves any other data that was already in the cue intact and does *not* include playback values from other cue lists or submasters. [Record Only] is a good way to modify existing cues without including contributions from other playbacks in the cue. In that way, it is very similar to update.

- **[Record Only] [Enter] [Enter]**- adds the current manual data to the selected cue.
- **[Record Only] [Cue] [**x**] [Enter] [Enter]** - adds the current manual data to cue “x”.

Move To

You can use the command {Move To} to move a cue from one location in the cue list to another.

- **[Cue] [4] <More SK> {Move To} <Cue> [8] [Enter]** - moves the contents of cue 4 to cue 8. Cue 4 is removed entirely. If cue 8 already existed, a confirmation will be required before replacing cue 8 (unless confirmations have been disabled in setup). Any contents of cue 8 will be replaced entirely.

[Update]

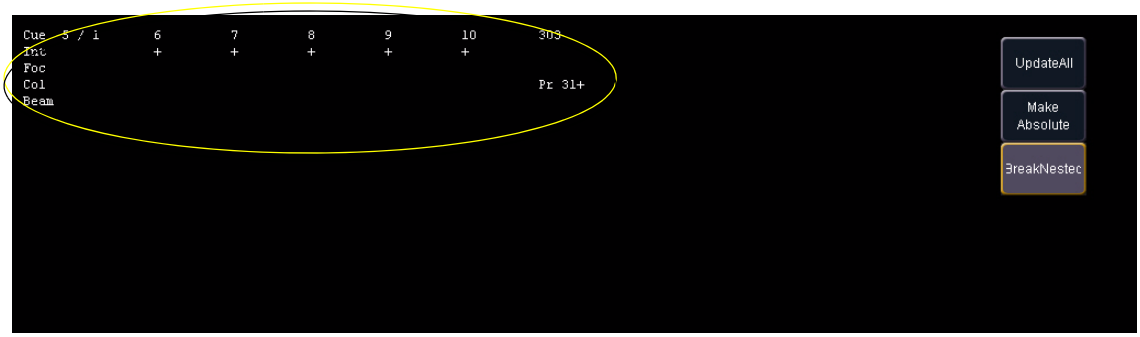
Update is a powerful feature, and also very versatile. Using a combination of [Cue Only], [Track], [Trace], and {Make Absolute}, the number of ways you can update specific information and manual data is virtually endless. Below you will find some examples of how data can be updated to various record targets either at once, or individually. This list is by no means exhaustive, so you are encouraged to try methods of updating on your own.

Update Dialogue Box

When you press [Update], a dialogue box will open in the CIA and the following options are displayed:

- {Update All} - this button will update the background cue and all references (nested and otherwise). Ion defaults to this option.
- {Make Absolute} - this button will update the background cue and convert all levels to absolute values, thereby removing any references.
- {Break Nested References} - this button will update the background cue's first level of reference only, thereby breaking any reference beyond the first. For example, if cue 1 channel 1 references preset 3, which then references color palette 5, when updated with this option, preset 3 would be updated, color palette 5 would not, and the reference to CP5 would be broken in preset 3.

The dialogue box also provides you with a listing (by record target) of what channels or parameters will be impacted by the update instruction. If the channel contains a reference in the cue, it is indicated. If not, a "+" is displayed. Any channels not owned by the background cue are displayed as "Unowned" and will therefore be excluded from the update.



Update Dialogue Box

Once you have made a selection from the available options, press [Enter] and the target will be updated.

Updating to References

When a cue is active, it is possible that various record targets (palettes or presets) will be played back within that cue. As changes are made to the data in that cue, as well as to the individual palettes or presets, updating both the cue and references within that cue is simple. When you have overridden a reference in a cue, the data is displayed in red with a red “R” in superscript next to the channel’s intensity.

By default, Ion updates any referenced data that was included in the cue.

For Example:

Cue 5 is recalled Live. It contains references to color palette 1 and preset 2. You make changes to channels included in these record targets. To update both the cue *and* the palettes or presets, press:

- ***[Update] [Enter]***

This will automatically take the manual changes and update them to color palette 1 and preset 2. Therefore cue 5 now references these new values, and the modifications to CP1 and PR2 have propagated through all of the show data.

If you had made changes to other channels that were not included in the palettes or presets used in cue 5, those values would also be updated to the cue as absolute data.

Updating Without References (Make Absolute)

If you want to record your changes to the cue *without* updating the references, you may use {Make Absolute} break the associated to the reference. The {Make Absolute} command can be applied to the required channels or parameters before the update instruction, or they can be applied during the update.

- **[Update] {Make Absolute} [Enter]** - this will break the references for any parameters which have been changed and update the cue with the changes. The referenced target will no longer be displayed in the channels which were made absolute. All of the data updated in cue 5 will now be shown as absolute data.
- **[5] [Thru] [9] [Update] {Make Absolute} [Enter]** - this will break only the references for channels 5-9 and record their manual values to the cue. Other manual values will not be included in this update.

You may also use [Record Only] to break references.

For Example:

Cue 5 is active and onstage. Channels 5-20 are currently referencing preset 1. You make changes to channels 5-9. The data for these changes is now manual. Press:

- ***[Record Only] [Enter] [Enter]***

If there were other changes on stage, you could have commanded:

- ***[5] [thru] [9] [Record Only] [Enter] [Enter]***

Only the manual data will be recorded as an update to cue 5. The reference to preset 1 for channels 5-9 is broken and now the cue will display the absolute data rather than the reference indicator.

Using Cue Only/Track

The [Cue Only/Track] key can be used as an applied exception to the cue only/track system setting. Therefore if the system is set to Cue Only, the key behaves as a [Track] command. Alternatively, if the system is set to Track, the key behaves as a [Cue Only] button.

For more information on Tracking vs. Cue Only see *Tracking vs. Cue Only, page 6* in Setup.

[Cue Only/Track] can be used in conjunction with record or update functions. Following are some examples of use:

Note: *In the following examples, the commands **[Cue Only]** and **[Track]** indicate the same key hit of [Cue Only/Track] - a single button on the keypad. The system setting determines the actual context of the button.*

For clarity, only the contextual function of the button is used in the examples.

With system set to "Track"

- **[Record] <Cue> [5] [Cue Only] [Enter] [Enter]** - rerecords cue 5. This will make the changes to cue 5 *only*. The changes will not track forward through the list.
- **[-] [Color] [Record] <Cue> [5] [Cue Only] [Enter] [Enter]** - as above, but changes to color parameters will not be included in the record and all data that was included will not track forward. Color data in the cue remains unchanged.
- **[Update] <Cue> [5] [Cue Only] [Enter]** - updates cue 5 with only those manual parameters that were receiving their instructions from that cue. The changes will not track forward in the list. Note that if the data being updated were referenced, this action updates the referenced target as well.
- **[-] [5] [Record] <Cue> [7] [Cue Only] [Enter] [Enter]** - rerecords the specified cue, except the contributions from channel 5 The changes will not track forward in the list.

With system set to "Cue Only"

- **[Record] <Cue> [5] [Track] [Enter] [Enter]** - rerecords cue 5. This will force the changes to track forward in the list until the next move instruction or block.
- **[-] [5] [Color] [Record] <Cue> [7] [Track] [Enter] [Enter]** - rerecords the specified cue, except the color data from channel 5. The recorded changes will track forward in the list.
- **[Update] <Cue> [3] [thru] [7] [Track] [Enter]** - updates cues 3 thru 7. Range updates are subject to the normal rules of track/cue only in determining impact on subsequent cues.

Using Trace

[Trace] works just as Track does, except it allows changes to be tracked backwards through the cue list, until it sees a move instruction. A trace will track into, but not beyond, a blocked instruction.

Following are some examples:

- **[Update] <Cue> [5] [Trace] [Enter]** -updates cue 5, and tracks changes backward until a move instruction is encountered. If the system is in track mode, the change will track forward in the cue list until the next move instruction or block. If in cue only mode, this has no impact on subsequent cues.
- **[Update] [Trace] [Cue Only/Track] [Enter]** - updates the selected cue and tracks changes backward until a move instruction is encountered. If the system is in track mode, the change is prohibited from tracking forward in the list. If in cue only mode, the change is allowed to track forward.

Updating the Current Cue

The current cue is updated by simply pressing **[Update] [Enter]**. When only one cue list is active, this update will include any changes to all channels.

Updating a Source Cue

To update the source of a level in the current cue (therefore, a move instruction in a prior cue) you must specify a trace for the desired channel(s).

- **[5] [Update] [Trace] [Enter]** - updates any manual changes for channel 5 in the current cue. Any tracked values for channel 5 are traced back to the source of the value (the original move instruction) and changed to the new value. The value for traced changes in the current cue will be magenta indicating it is a tracked value.

Updating a Non-Active Cue

It is possible to use the same update commands illustrated above to update inactive cues (cues not live onstage). In these situations, if the updated cue is not the source of a channel's live value, manual data will remain manual. If the updated cue *is* the source of the current value, the values will change to magenta (indicating tracked) when the update is completed.

Recording and Editing Cues from Blind

Press **[Blind]** and the selected cue will be displayed. You can make changes to cues in the blind display using either the summary, table, or spreadsheet views.

Note: *Edits in blind take effect immediately. [Record] or [Update] commands do not work in blind. Therefore, editing in blind is a fast and effective way to make specific changes to show data.*

If changes are made in the blind display to an active cue, these changes will not impact the current stage state. To make blind changes active you can press [Assert] & {Load} button for the fader associated with the cue.

Move instructions can be removed from a cue by selecting the channel and pressing **[At] [Enter]**. This allows all values from the previous cue to track into the current cue. You can also use this command for specific parameters as well.

For Example:

Suppose you are in blind cue 5 and you make changes to channels 1-5:

- ***[1] [Thru] [5] [At] [5] <0> [Iris] [3] [5] [Enter]***

Intensity goes to 50% and Iris to 35%. You decide to remove the Iris instruction:

- ***[Iris] [At] [Enter]***

The Iris value from the previous cue tracks in. Then you remove the intensity change as well:

- ***[Intensity] [At] [Enter]***

All values from the previous cue track in.

Instead of using multiple commands, you can, in one command, return the channels to their values from the previous cue:

- ***[1] [Thru] [5] [At] [Enter]***

The impact of blind edits on subsequent cues is determined by the default setting of Track/Cue Only mode. Obviously in track mode any changes will track forward until the next move instruction, unless [Cue only] is pressed. In cue only mode any changes will apply only to the selected cue. If you want values to track forward, the [Track] button will allow it. The track/cue only instruction must be applied when a value is entered.

From Summary or Table Views

Use the [Format] key to cycle through the available views (see *Using [Format], page 38*).

Summary view allows you to see the greatest number of channels at once, though parameter data is somewhat truncated. Channels with focus, color, or beam data are indicated with a respective F, C, or B beneath the level data. This view is useful for viewing lots of channel data at once or for editing primarily intensity values.

Table view grants you greater visibility of parameter data and a reduced number of visible channels. This view displays channels along the y axis and parameters along the x axis. Parameter categories are always visible (I, F, C, and B). You can also view specific parameters by pressing and holding the [Parameters] button and then pressing the category softkey(s) for the parameters you wish to view. This will expand the category to show any parameters used in the show. You can also deselect the parameters you do not wish to see. This is remembered the next time you go to table view.

The table view is useful for viewing and editing all parameters for a smaller number of channels.

The following softkeys are represented in the channel summary and table views:

- Make Absolute
- Make Null
- Replace With
- Offset

Cue attribute keys become available once you specify a cue.

Both summary and table views allow you to make changes to channels or parameters.

From the Cue Spreadsheet

The cue spreadsheet is another useful blind view of cue data. In spreadsheet view, cues are listed on the y axis and channels and parameters are displayed on the x axis. This view is useful for viewing a limited number of channels over a span of numerous cues. This is the only view where channel data of multiple cues can be viewed at once. This makes spreadsheet view useful for viewing overall trends in channel and parameter data.

Editing cue ranges is possible in spreadsheet view. {Move To} is only available from this view

The following softkeys are represented in the channel spreadsheet view:

- Make Absolute
- Make Null
- Replace With
- Offset

Cue attribute keys become available once you specify a cue.

Replace With

{Replace With} is used to select channels that have certain specified values and then provide new instructions for those values.

For Example:

Select a range of cues:

- ***[Cue] [1] [Thru] [9] [Enter]***

Select a range of channels that are used throughout these cues and enter a change instruction:

- ***[1] [Thru] [7] <At> [Color Palette] [5] {Replace With} <Color Palette> [3] [Enter]***

This instruction finds all instances of channels 1-7 in cues 1-9 that are in color palette 5 and replace CP5 with CP3. Be aware of the track/cue only settings when using this command.

The range of possibilities of potential {Replace With} commands is virtually endless and can be applied to single cues or channels, ranges of cues or channels, parameters of any type, or timing data.

Move To

{Move To} is used to move cues from one location in a cue list to another location in the same or a different cue list. When cues are moved, values that were tracks or move instructions and *now* match the previous cue will be auto-blocked by the system. The impact on subsequent cues is based on track/cue only settings as described above. Below is an example of {Move To}:

- **[Cue] [2] {Move To} <Cue> [9] [Enter]** - the contents of cue 2 moves to cue 9. Cue 2 is deleted. If cue 9 already existed, a confirmation would be required to overwrite it.

In the above example, any tracked values in cue 2 become blocks (see *Block, page 146*) or moves in cue 9, as well as any move instructions which now match the previous cue. Cues after cue 9 are affected based on the default setting of track/cue only. Any values in the cue after cue 2 that tracked from moves in cue 2 are changed to move instructions.

Ranges of cues can be moved as well. You can also move cues to other cue lists. In either of these situations if any cue is to be overwritten, a confirmation is required.

Using Encoders in Blind

When a cue is specified, you can select channels and alter parameters using the encoders.

Deleting Cues

Cues, lists of cues, or ranges of cues can be deleted. When deleting cues, the track/cue only setting of the console will determine how subsequent cues are affected. The [Cue Only/Track] button can be used to modify the default behavior as needed.

In Track Mode

When the console is in track mode, deleting a cue also removes any move instructions provided by the cue. For example, assume you have stored cues 1-10 and cue 5 contains move instructions for channels 1-5. If cue 5 is deleted, the move instructions are deleted as well and the values from cue 4 will track directly into cue 6 and beyond.

In this instance, if you used the [Cue Only] button in the delete instruction, cue 5 would be deleted, but the tracked values in cue 6 that originated in cue 5 would remain and be converted to move instructions.

In Cue Only Mode

When the console is in cue only mode, any subsequent tracked values are not eliminated, but are converted to move instructions instead.

In the example above, deleting cue 5 (in cue only mode) would result in any tracked values in cue 6, that originated in cue 5, being converted to move instructions.

If you apply the [Track] button to the delete instruction, the move instructions from cue 5 are deleted and the values from cue 4 would then track into cue 6 and beyond.

Some examples of cue deletion are:

- **[Delete] <Cue> [5] [Enter] [Enter]** - deletes cue 5. Subsequent cues in the list are affected depending on the console default setting as described above.
- **[Delete] <Cue> [6] [Cue Only/Track] [Enter] [Enter]** - deletes cue 6, making exception to the default setting, as described above.
- **[Delete] <Cue> [7] [Part] [1] [Enter] [Enter]** - deletes part 1 of cue 7
- **[Delete] <Cue> [8] [Part] [1] [Thru] [3] [Cue Only/Track] [Enter] [Enter]** - deletes parts 1-3 of cue 8, making exception to the default setting, as described above.
- **[Group] [1] [Delete] <Cue> [2] [Enter]** - deletes any channels in group 1 from cue 2. Cue 2 remains in the cue list and any channels not in group 1 are unaffected.
- **[Delete] <Cue> [2] [thru] [8] [Cue Only/Track] [Enter] [Enter]** - deletes cues 2-8, making exception to the default setting, as described above.

Chapter 12

Using Mark

[Mark] is an instruction that automates the process of presetting moving lights to their required state in a cue, prior to fading intensity up. This allows your moving lights to unobtrusively perform non-intensity parameter transitions in an inactive (darkened) state.

Ion provides two different methods to mark lights: AutoMark and Referenced Marks.

This chapter contains the following sections:

- ***AutoMark*** 160
- ***Referenced Marks*** 161

AutoMark

The AutoMark feature is a system default setting and can be turned on or off at a global level. The system default for this setting is off. To change the default settings see *Show Settings, page 81*.

When AutoMark is enabled, non-intensity parameter transitions will occur in the cue *immediately preceding* the cue in which the changes are stored, if intensity in that cue is moved from zero to any active level. Therefore, the preceding cue “executes” the AutoMark.

AutoMark information is displayed for cues or cue parts. It is not a channel instruction. AutoMarked cues are indicated by an “M” in the M column of the playback status display.

AutoMarks will execute using the time of the cue in which the moves occur (the cue marked by “M”). The exception to this is if discrete timing is stored with the move instruction, in which case the discrete time will be used.

Conditions Triggering an AutoMark

The following rules determine which channels AutoMark is applied to and how it is deployed:

- The marked cue must have a move instruction for intensity of moving lights above zero or null.
- The marked cue must have a move instruction for non-intensity parameters of those channels.
- AutoMark will not occur if the channel is receiving an intensity instruction from another source (such as a submaster or HTP fader).
- AutoMark must be enabled for an AutoMark to occur. AutoMark is based on the current setting of the default *during playback.* It does not matter what the setting is at the point of record.
- On a “per channel” basis, an AutoMark does not occur until:
    - Any parameter delay time has elapsed *and*
    - The intensity has reached zero and the parameter has completed any previous movement.

Allowing a Live Move

When AutoMark is “On” it is possible to override it on a per cue (or cue part) basis. The override will be available through a softkey, “AutoMark Off”. This softkey is not visible when AutoMark is disabled in default settings.

AutoMark can be disabled on cues or cue parts.

When enabled, the cue that executes the mark will have an “M” in the flags field. If AutoMark is disabled, allowing a live move, a “D” is displayed in the flags field of the cue or cue part.

The AutoMark action uses the time of the cue in which it moves (the M cue), unless it has discrete timing. If discrete timing is stored with the move instruction, it will use that time when it moves.

By using AutoMark with multipart cues, it is possible to have some parameters mark and others move live.

Referenced Marks

Referenced marks are user-specified marks that are manually applied to specific channels or parameters. When AutoMarks are disabled, referenced marks are available for programming. When AutoMark is enabled, referenced marks are not available.

There are essentially two parts to a successful referenced mark. The first part is the cue with the mark flag (set by the user). This is the cue in which any non-intensity parameters will change. This cue is referred to as the **marked cue**.

The second part is the cue with intensity value for the channels in question. This is referred to as the **source cue**. This is also the cue where the non-intensity moves are stored.

In order to use mark properly, you *must specify* channels to be marked in the source cue. Ion will not assume all moving lights apply to any given mark.

Unlike AutoMark, referenced marks will still apply if the marked channel is receiving intensity data from another source (such as a submaster or HTP fader).

There are two ways to apply a referenced mark. You can apply a mark flag at a cue level and then subsequently reference that flag in a later cue, **or** you can apply a mark to a cue and reference back to an earlier cue.

Referenced marks are useful because the non-intensity parameter data is stored in the cue that actually fades the lights up. Therefore, any changes to the non-intensity parameter data is modified in the source cue. You do not need to worry about changing it in the marked cue.

Setting Referenced Mark Flags

You can apply a mark flag by pressing:

- **[Cue] [n] [Mark] [Enter]**

This sets a flag (M) on a cue for later marking activity. In subsequent cues, when channels are marked, they will preset for movement in this cue (unless told to mark elsewhere).

When you are building a cue containing channels that you want to mark, do the following:

- **[**select channels**] [Mark] [Enter]**
- Store the cue, following normal procedures. Ion will automatically look backwards in the cue list for the first mark flag it encounters.

For Example:

Assume you had placed a mark flag on Cue 10 (this is becomes the Marked Cue).

- ***[Cue] [10] [Mark] [Enter]***

Later you store Cue 12 with a mark instruction on channels 1-10 (this becomes the Source Cue).

- ***[1] [thru] [10] [Mark] [Enter]*** - Note that channels 1-10 are displayed with a red “M” in the upper right corner.
- ***[Record] <Cue> [1] [2] [Enter]***

Since no specific mark instruction was given to the channels in cue 12, the channels will mark back to the first “M” encountered in the preceding cues of the cue list, provided that the intensity for those channels is “out” throughout the duration of the mark.

When Cue 10 is played back, the non-intensity parameters of channels 1-10 will fade to the values stored in Cue 12. Then in Cue 12, the intensity will fade up on those channels.

Mark Display Indicators

In the previous example, indications that a mark had been placed are as follows. Cue 10 would be shown with a mark flag (M) in the cue list. In addition, when cue 10 is played back, channels 1-10 will show a green “MK” in the intensity field, while the non-intensity parameters would show the source cue number in green “Q12” (the MK in the intensity field is green if, in cue 10, the lights are fading to zero and then the NPs are marking. If, in cue 10, channels 1-10 were already at zero, a magenta “MK” will be displayed).

The source cue (cue 12) would include “M” next to the intensity level and any non-intensity parameter values would be displayed in their proper move color. Also, in the cue list, cue 12 would have an “R” in the mark flags field.

Applying Flags as Channels are Marked

You may also apply a mark flag to a previous cue by doing the following:

- **[select channels] [Mark] [Cue] [5] [Enter]**
- **[Record] [Cue] [8] [Enter]**

This would mark cue 5 to perform any non-intensity moves stored in cue 8. The display indicators for this mark would be the same as shown in the previous example. As long as intensity is at zero within the cue range, if there are any non-intensity move instructions for these channels between these two cues, they will be removed.

It is also possible to mark only certain parameters for marked moves, while allowing live moves for other parameters.

For Example:

If you wanted to mark only focus, and allow all other parameters to transition while the light is fading up, you can press:

- ***[1] [thru] [10] [Focus] [Mark] [Enter]***

Removing Referenced Marks

Mark is a toggle state. Therefore, the first mark command sets a mark. The second removes it.

To remove a mark flag from a cue, press:

- **[Cue] [n] [Mark] [Enter]**

To remove a mark from a channel:

- **[select channel] [Mark] [Enter]**

Note: *If a mark is removed from a channel in live, the corresponding cue must be updated.*

It is also possible to mark to a cue that doesn't exist, and when the mark is stored, Ion will automatically create the cue to mark to.

For Example:

If cue 2 does not exist yet:

- ***[select channels] [mark] [2] [Enter]***

The command line will display, “Create Mark Cue?”

- ***[Enter]***

When the cue is stored, the system will automatically create a cue 2 and mark the lights to it.

Reference Marks and Timing

Movement of non-intensity parameters in conjunction with a mark will adhere to the following timing rules.

If discrete timing is used for non-intensity parameters:

When channels execute a mark, the moves will use the discrete time(s) assigned to them *in the source cue*.

For Example:

A mark is applied to Cue 5, making it the marked cue.

- ***[Cue] [5] [Mark] [Enter]***

Later, channels 1-10 are assigned discrete timing and a mark instruction:

- ***[1] [thru] [1] [0] {Focus} [Time] [8] [Mark] [Enter]***

Then, those channels are recorded into Cue 10:

- ***[Record] <Cue> [1] [0] [Enter]***

In this instance, when Cue 5 is executed, channels 1-10 will perform their focus parameter moves in 8 seconds, as specified in Cue 10 (the source cue, which is the source of their move instruction).

If *no* discrete timing is used for non-intensity parameters:

When channels execute a mark, the moves will use the time recorded *in the marked cue*.

For Example:

Cue 5 is recorded with a time of 10 seconds.

- ***[Record] <Cue> [5] [Time] [1] [0] [Enter]***

A mark is applied to Cue 5 as above.

- ***[Cue] [5] [Mark] [Enter]***

Later, channels 1-10 are assigned a mark instruction and then recorded into Cue 10 with *no* discrete timing:

- ***[1] [thru] [1] [0] [Mark] [Enter]***
- ***[Record] <Cue> [1] [0] [Enter]***

When Cue 5 is executed, channels 1-10 will perform their non-intensity parameter changes in 10 seconds, as specified in Cue 5 (the marked cue).

Chapter 13

Working with Multiple Cue Lists

Ion provides many useful tools to allow you work efficiently and simultaneously with multiple cue lists. This chapter focuses on the features and methods used when working with more than one cue list.

This chapter contains the following sections:

- ***Recording to a New Cue List*** 166
- ***Using Assert***. 167
- ***Changing the Active Cue List***. 168
- ***Using the Cue List Index***. 170

Recording to a New Cue List

When recording cues, cue list 1 is initially used as the default cue list. Cue list 1 is displayed with only the cue number. It does not have a lead cue list number or a “/”. To record to another cue list, that list must first be specified. Cues will then be recorded to that cue list until another list is specified, or until the selected cue is changed in live.

You may record up to 99 cue lists in an Ion show file.

The cue list that you are storing to is always determined by the selected cue, unless you specify a different cue list. The selected cue is displayed just above the command line on the CIA, and at the bottom of the live/blind screen.

The selected cue is the last cue that you affected in live. This includes a record, an update or a playback action such as [Go], [Back] or a [Go To Cue] instruction. It is very useful to keep an eye on the selected cue.

Using Record

[Record] will record all parameters of any channels that have non-default values to a specified cue.

To record to a new cue list, press:

- **[Record] <Cue> [2] [/] [5] [Enter]** - this will create cue list 2 and will record the data to cue 5 in that cue list.

Any cues recorded after this will automatically record to cue list 2 until another cue list is specified or the selected cue changes the cue list number.

Using Record Only

[Record Only] can be used to create a new cue list instead of [Record]. [Record Only] stores only manual data to the specified cue.

To record to a new cue list press:

- **[Record Only] <Cue> [2] [/] [5] [Enter]** - this will create cue list 2 and will record all manual data to cue 5 in that cue list.

The cue list display will change to show only data from cue list 2. Any cues recorded after this will automatically record to cue list 2 until another cue list is specified or the selected cue changes the cue list.

Make Manual

This softkey can be used to convert live cue data into manual values, allowing them to be included in the [Record Only] operation. Therefore data from other cues or lists can be selectively converted to manual data and then stored to another cue/list using {Record Only].

For more information on {Make Manual}, see *Using {Make Manual}, page 193*.

Using Assert

By default, channel parameters only respond to move instructions during playback (see *Cue List Ownership, page 6*). The [Assert] function allows tracked data from a cue to be replayed, even when another cue list has taken control of that channel or parameter.

Assert can be applied to cues, cue parts, channels, or channel parameters.

Asserted channels will play back their tracked values, regardless of cue list ownership, when the associated cue is replayed.

At a Cue Level

When applied at a cue level, [Assert] ensures that *all* data in the cue - both moves and tracks - will be played back at their stored values.

To place an assert on a cue press:

- **[Cue]** [x] **[/]** [y] **[Assert] [Enter]** - the cue will assert all of its channels upon playback. If you are asserting the selected cue, it is not necessary to specify the cue list. An “A” will be displayed in the “A” column of the cue attributes (cue index, playback status, and so on); indicating the cue has been asserted.

At a Channel Level

When applied at a channel or parameter level, assert ensures that the entire channel or the specified parameter will be played back at its stored value.

To place an assert on a channel or group of channels:

Step 1: **[**select channels**] [Assert] [Enter]** - a red “A” will appear next to all of the channels’ parameters in the live/blind display. This indicates the assert is placed, but not yet recorded to a cue.

Step 2: **[Record] <Cue> [**x**] [Enter]** - the red “A” turns to blue in the live/blind display, indicating the assert has been recorded. In the cue x row of the playback status display or the cue list index, a lower case ‘a’ appears in the “A” column, indicating that a partial assert is included in cue x.

You may also store this assert using [Update] or you can apply it in blind and no update or record action is required.

To place an assert on specific parameters:

Step 1: **[**select channels**] {Intensity/Color/Focus/Beam** or **parameter buttons} [Assert] [Enter]** - places an assert on the specific parameters of the selected channels. This must be recorded to a cue.

Step 2: **[Record] <Cue> [**x**] [Enter]** - the assert is recorded to cue x. In the cue x row of the playback status display or cue list index, an asterisk (*) appears in the “A” column, indicating that a partial assert is included in cue x.

Assert is a very useful tool allowing channels that have been seized by other cue lists to be repossessed by the associated cue list, while still allowing the asserted channel data to be treated as tracked instructions.

Using AllFade

Allfade is a cue attribute that commands any intensity values on stage that are not provided by the associated cue to fade to zero intensity when the cue is played. The allfade will adhere to the downfade time of the associated cue.

This is useful in conjunction with assert, so you can regain control of channels from other cue lists *and* fade other channels from that cue list out.

Note: *Channels with tracked values in the associated cue will not fade out in response to an allfade. These tracked values are part of the associated cue and therefore will be played back.*

To assign an allfade to a cue:

- **[Record] <Cue> [**n**] [/] [**m**] [Allfade] [Enter]** - records cue n/m as an allfade cue, thereby forcing any channels not in the cue to fade to zero on playback.

Like many other cue attributes, allfade is a toggle state. To remove the allfade flag, specify the cue and press [Allfade] [Enter].

Changing the Active Cue List

The active cue list will be displayed in detail on the playback status display. This view is changed by the following actions:

- Recalling another cue list in the command line - **[Cue] [3] [/] [Enter]**
- Recording a cue to another cue list - **[Record] <Cue> [3] [/] [8] [Enter]**
- Playing back a cue from the fader of another cue list - press **[Go]** for the associated fader.

Using [Go To Cue]

[Go To Cue] defaults to the currently selected cue list. [Go to Cue] instructions can be executed from any operating mode, without returning to live.

By default, a Go to Cue instruction is an out-of-sequence cue and will follow the rules of such (see *Out of Sequence Cues, page 180*.

For examples of how to use [Go To Cue], please see *Go To Cue, page 181*.

Using Go To Cue 0

[Go To Cue] [0] is a command line instruction that resets all intensity values not owned by another fader to default, including any manual values that are not an override to another active fader value. [Go To Cue] [0] also resets the related cue list (as per the selected cue) to the top of the list, with the first cue pending.

To [Go To Cue] [0] on another cue list, press:

- **[Go To Cue] [2] [\] [0] [Enter]**

Note: *For your convenience, Ion has an added intensity parameter for LED fixtures, that by manufacturer default, have only RGB parameters but no intensity parameter. With this added control, the LED fixture will respond to the [Go To Cue 0] command.*

Captured channels, independent values and values from other faders running a different cue list are not affected by a [Go To Cue] [0] command.

When [Go To Cue] [0] is executed, any intensity values owned by the associated cue will fade out, while all non-intensity parameters remain in the current state. A [Go To Cue] [0] instruction does not impact the input from other programmers using partition, unless the channels or parameters are shared.

[Go To Cue 0] & [Load]

You can use the [Go To Cue 0] button, located with the playback controls, in conjunction with a fader load button to send a specific cue list to cue 0. This action does not use the command line. On the desired fader, simply press:

- **[Go To Cue 0] & [Load]**

Using Go To Cue Out

To reset all parameters to their default state (unless they are controlled by a submaster) and reset all cue lists that are loaded to faders so that the first cue of each list is pending, press:

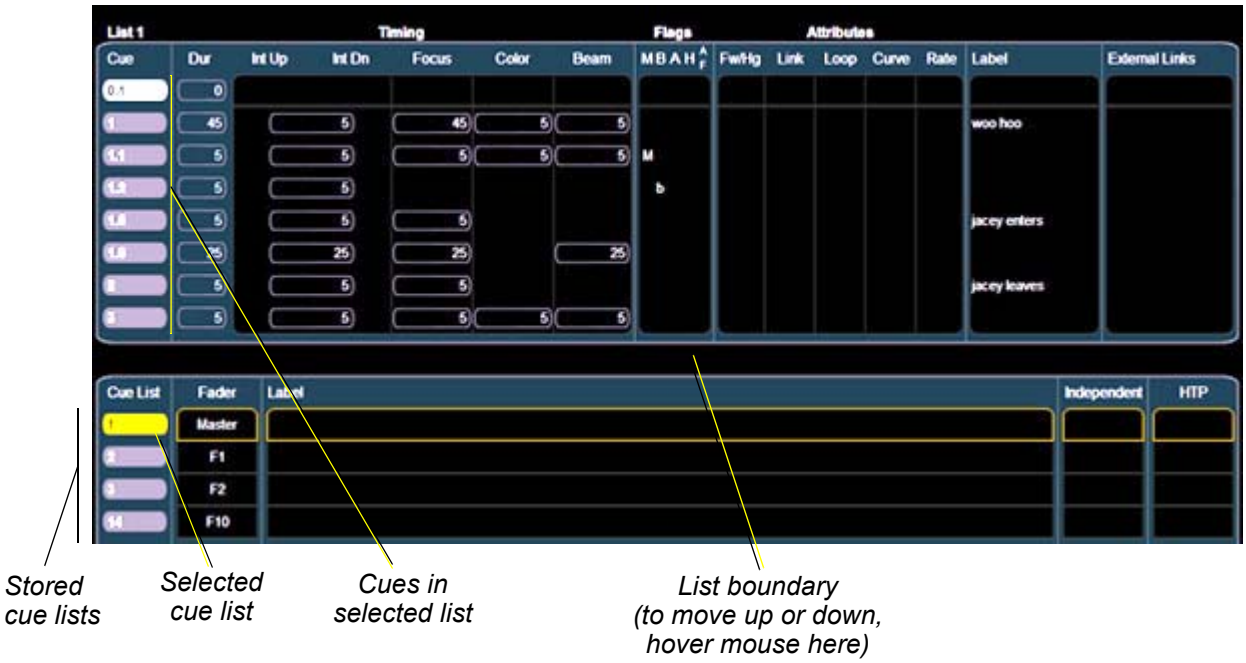
- **[Go To Cue] [Out] [Enter]**

Using the Cue List Index

The cue list index is a blind display list which shows the cue list you are working with, the cue status, any other stored cue lists and what (if any) faders the lists are loaded onto. All cue attributes can be edited from the list including whether the cue list is set to independent or not, and if the intensity values in the cue list will play back as HTP or LTP. While cue attributes can be changed in live or blind, independent and HTP/LTP settings can only be set in the cue list index.

Open the Cue List Index

You can access the cue list index by pressing **[Cue] [Cue]**, or you can navigate within the browser to Record Target Lists > Cue List Index and press **[Select]**.



The top half of the cue list index displays all stored cues, including cue attributes, for the selected cue list. The bottom half of the cue list index displays all stored cue lists. The selected cue list is highlighted.

Using the mouse, you can move the barrier between the stored cue display (top) and the stored list display (bottom) to increase or decrease the viewing area of either section. Hover the mouse arrow over the list boundary until it changes to the familiar “move boundary” icon. Then click and drag the boundary up or down to the desired height.

Cue List Attributes

Cue list attributes determine how the cue list will interact with other playbacks. Cue list attributes include:

- The cue list number
- The cue list label
- Intensity HTP or LTP setting (default is LTP)
- Independent On or Off (default is off)

When a cue list is loaded to a fader, all attributes of that cue list are in effect. When a new cue list is loaded, the attributes of that cue list are in effect, and any manually set behavior of the fader (such as filter states, timing disable, etc.) are maintained.

When the cue list index is in focus, the sofkeys change to {HTP/LTP}, {Independent}, {Move To} and {Edit}.

HTP/LTP

The {HTP/LTP} softkey is a toggle state between LTP (latest takes precedence) and HTP (highest takes precedence).

All parameters, other than intensity, are LTP. When a cue is executed, all parameters get their starting levels from their current setting, regardless of the playback providing that instruction. In all instances, the parameter moves from its current setting to its new setting in the time of the cue providing the move instruction.

Intensity, by default, is also LTP. LTP implies that a channel parameter has only one value—the last one it was given. Cue lists can be set with an HTP override. When a cue list is set to HTP, intensity values provided by that cue list will override the LTP value (of which there can be only one), provided the HTP instruction is higher than the LTP value. When a cue from an HTP cue list is executed, Ion determines if the intensity value when the cue is complete will be higher than the current setting. If so, the intensity will begin to fade from its current value to the required value in the incoming cue using the cue's upfade time.

Note that this behavior is relevant only to cues. If an HTP cue is going to provide a higher level than a submaster value, Ion will wait until the value is matched before assuming control of the intensity.

The following example illustrates the use of the {HTP/LTP} softkey in the cue list index:

- **<Cue> [1] [/] {LTP/HTP} [Enter]** - toggles the selected cue list between HTP/LTP behavior.

Independent

The {Independent} softkey sets a cue list to independent. Any channel parameters currently under the control of an independent playback cannot be changed by other non-independent playbacks or submasters. Independent status is equally shared between other independent cue lists and submasters.

The following example illustrates the use of the {Independent} softkey in the cue list index:

- **<Cue> [2] [/] {Independent} [Enter]** - toggles the selected cue list between non-independent and independent mode.

Move To

The {Move To} softkey is used to move cues from one location in a cue list to another location in the same or even a different cue list. When cues are moved, values that had tracked will be matched to the previous cue and will be auto-blocked by the system. The impact on subsequent cues is based on track/cue only conventions.

The following example illustrates the use of the {Move To} softkey in the cue list index:

- **<Cue> [1] [/] [2] {Move To} <Cue> [2] [/] [1] [Enter]** - moves the selected cue 2 from cue list 1 to the new list 2. When a cue list is moved, any links that referenced the cue list are changed accordingly.

Alternatively, you could use [Copy To] to copy the content of the cue to another cue or cue list.

Edit

The {Edit} softkey opens a blind channel view of the selected cue and changes focus from the cue list index. You can change the blind display to spreadsheet or table view by pressing the **[Format]** key. You can edit any of the cue attributes for the cue selected in the index, but the cue contents must be edited in the blind display. *See "Recording and Editing Cues from Blind" on page 155.*

Chapter 14

Using Filters

Filters are used to determine which parameters can be stored to cues, palettes, and presets. The filter selection tool in the CIA affects record operations as long as the filters are set.

This chapter contains the following sections:

- ***Record Filters*** 174
- ***Storing Data with Record Filters*** 176

Record Filters

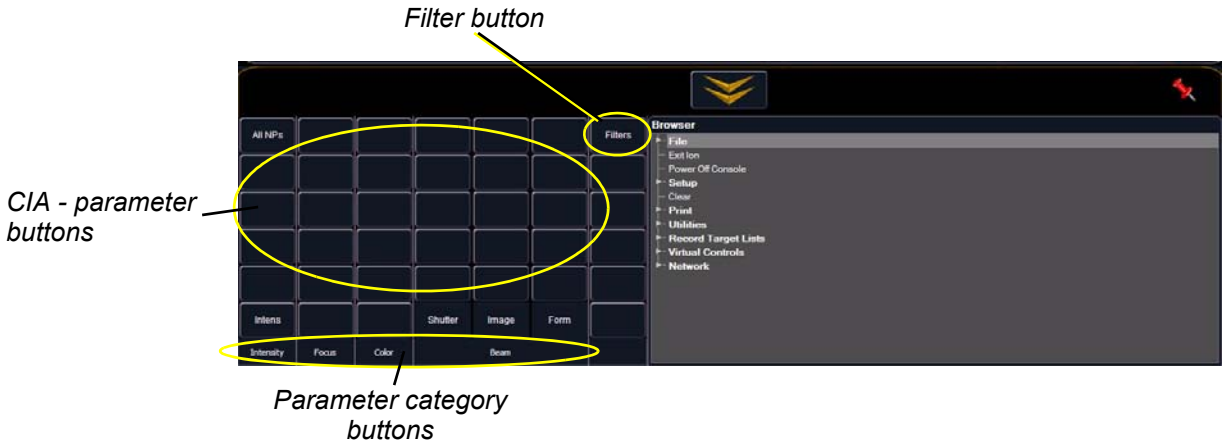
Record filters are used to select specific parameter data to store to record targets. When no filters are selected, all parameters can be stored, as appropriate to the [Record], [Record Only] and selective record action used.

Note: *When storing show data, applied filters are highlighted and allow the associated parameters to be stored in record targets.*

When filters are deselected (not highlighted), they prohibit *storing the associated parameters.*

There is no difference between having all filters selected and having no filters selected (default). In either state, all parameters are available for recording.

Record filters are applied from the CIA using the following buttons:



The parameter category buttons can be used to select filters, as follows:

- Intensity (enables recording intensity data)
- Focus (enables recording pan and tilt)
- Color (enables recording color data)
- Beam (enables recording all beam data)

To apply record filters by category:

Step 1: Click **{Filters}** in the top-right corner of the parameter grid in the CIA. The parameter buttons change to display filter selection.

Step 2: Click the parameter category button **{Intensity/Focus/Color/Beam}** for the category you want to include in the record target. All parameters in that category will be highlighted and “Filter On” will appear above the softkey.

Step 3: Click **{Filters}**. The buttons return to their normal appearance.

In subsequent record functions, only the filtered categories will be recorded. You may apply multiple category filters at once. Remember that applying all filters and no filters yields the same effect.

Partial Filters

If you do not want an entire category to be recorded, you may apply parameter specific filters (partial filters) instead.

To apply partial filters:

Step 1: Click **{Filters}** in the top-right corner of the parameter grid in the CIA. The parameter buttons change to display filter selection.

Step 2: Click the parameter button (for example **{Zoom}**) for the parameter you want to include in the record target. That parameter will be highlighted and “Filter On” will appear above the softkey.

Step 3: Click **{Filters}**. The buttons return to their normal appearance.

In subsequent record functions, only the filtered parameters will be recorded. You may apply as many partial filters at once, as you wish. Any *unfiltered* parameters will not be included in record actions. In live, unfiltered parameter data is displayed in its proper color, but a grey “n” (indicating null data) will appear in the upper left corner of the parameter’s field.

Removing Filters

Applying filters is a toggle state. To remove any filter, simply repeat the application process described above. When pressed again, any applied filter will be removed.

To remove all filters at once:

Step 1: Press and hold **[Filters]**. The parameter buttons change to display filter selection. {Clear Filters} appears in the upper left corner of the parameter buttons.

Step 2: Press **{Clear Filters}**. Any applied filters will be removed and the highlights will turn off.

Step 3: Release **[Filters]**. The buttons return to their normal appearance. All parameters are now available to record functions.

Storing Data with Record Filters

If a record target is stored with filters in place, the filters allow only associated parameter data to be recorded in the target. Non-filtered data is not included when you record.

The various record targets are affected by filters in the following ways:

- **Palettes** - Palettes by definition are already filtered. The color and beam filters can be used to further modify what is stored in the color and beam palettes, however.
- **Presets** - Active filter settings impact what is stored in presets. Non-filtered data is recorded with a null value to the preset.
- **Cues** - Active filter settings impact what is stored in cues, even when using “record only” commands.
- **[Update]** - Filter settings are ignored.
- **[Recall From]** - Recall from instructions are not affected by the filters.

Chapter 15

Cue Playback

Ion has many features that aid in cue playback. The playback section is located on the left side of the console and includes the master fader pair, grandmaster, load button, and the fader control button. Virtual faders can also be used in playback.

This chapter contains the following sections:

- ***Introduction to Playback*** 178
- ***Selected Cue*** 179
- ***Out of Sequence Cues*** 180
- ***Assigning Faders*** 182
- ***Changing Virtual Fader Pages*** 182
- ***Playback Fader Controls*** 183

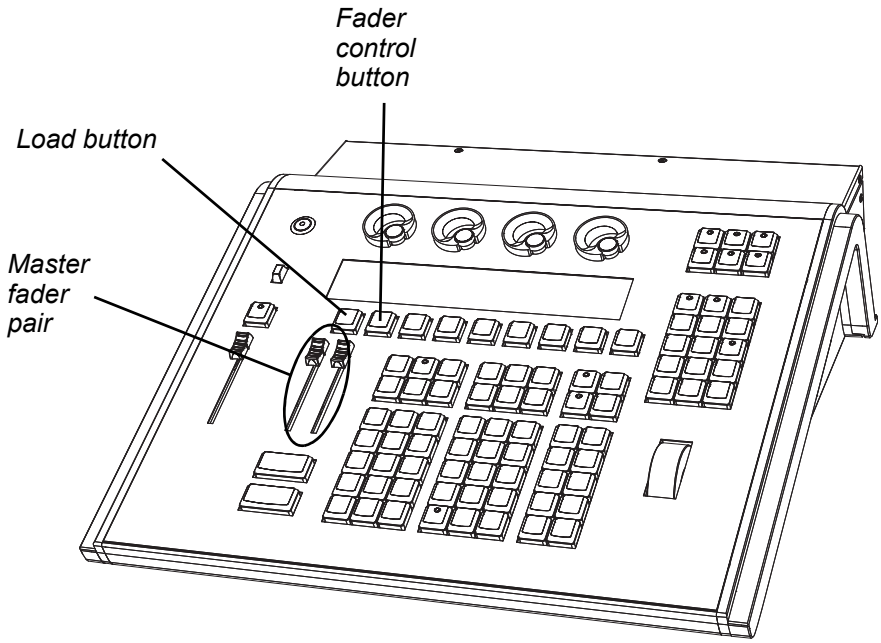
Introduction to Playback

Cues are played back using the master playback fader pair. While any cue list can be loaded to these faders, the first cue list you record to will automatically load to the master fader pair.

The master playback fader pair is located to the left of the control keypad. The master is a split cross-fader pair. The two buttons beneath the master fader pair are [Go] and [Stop/Back]. The [Load] button is located directly above the fader pair and the area of the LCD above it corresponds as well, displaying the current cue and list active on the master fader.

Playback controls

.



Selected Cue

The selected cue is always indicated just above the CIA. The selected cue and all of its attributes are displayed near the bottom of the live/blind display and on the playback status display.

Live / Blind

When working in live, the selected cue is always the last cue you recorded, edited, updated or played back. When entering blind for cues, the selected cue will be selected and displayed. Changing the selected cue in blind will cause the playback status display to change as well, allowing you to see all the attributes of the cues surrounding the selected cue. When you return to live, the selected cue is synchronized to the last selected cue in that mode.

The attributes of the selected cue (such as timing, attributes, label and external links) are shown at the bottom of the live/blind display, below the command line.

In Live

To load a new cue to the faders, select the cue on the command line, press **[Enter]**, and then press **[Load]**. When the **[Go]** button is pressed, the activated cue will be the selected cue.

For Example:

Assume cue list 1 is currently loaded to the master fader pair. To load cue 2/1:

- ***[Cue] [2] [/] [1] [Enter] [Load]***

Cue 2/1 will load to the pending file of the master fader pair.

In this example, the last cue executed from cue list 1 is still the active cue, while cue 2/1 is pending. When **[Go]** is pressed, 2/1 will be executed.

The selected cue is changed by go, record, or update instructions as well as cue modification or selecting a cue on the command line. When you execute a cue that has a follow or hang time, the next cue will become the selected cue when activated.

In Blind

While in blind, changing the selected cue will change the playback status display to show information surrounding that cue.

CAUTION: *When editing in blind, changes to cues are automatic, therefore no update or record command is required. Changing cues in blind will alter the cue instantly.*

While working in blind mode, cues can be executed using [Go], [Back] and [Go to Cue], but this does not change the cue you are working with in blind.

Out of Sequence Cues

An out-of-sequence cue is any cue that is played back in one of the following ways:

- Cue is executed using a [Go To Cue] command
- Cue is executed by a link instruction
- Cue is loaded into a fader's pending file
- Cue is re-executed using [Assert] & [Load] or is asserted from the command line

Generally, when an out of sequence cue is executed, the entire contents of the cue will be played back (move instructions *and* tracked values).

For Example:

> Cue 1 sets channel 1 to full. That value is tracked forward until cue 10. The programmer plays back cue 1 on fader 1. Then the programmer sets channel 1's intensity to 50% manually. If she executes cue 2, channel 1 remains at 50%, as it is a channel parameter that is not receiving a move instruction from the incoming cue.
>
> However, if she presses [Go to Cue] [5] [Enter] (an out-of-sequence execution), even though the value for channel 1 in Cue 5 is a tracked value, channel 1 will fade from the manual value of 50%, to full in the Go-to-cue time.

Captured channels are exempt from these out-of-sequence cue conventions.

Go To Cue

[Go to Cue] instructions can be executed from any operating mode. By default, a [Go to Cue] instruction is an out-of-sequence cue and will follow the rules of such (see *Out of Sequence Cues* above.

Following are examples of [Go To Cue]:

- **[Go To Cue] [5] [Enter]** - all parameters with values in cue 5 are faded to those values, even if they are tracked.
- **[Go To Cue] [Next] [Enter]** - takes you to the next cue in the active list.
- **[Go To Cue] [Last] [Enter]** - takes you to the previous cue in the active list.

When a [Go To Cue] instruction is executed, any null states applied with {Make Null} are removed. To maintain the make null setting, you should use [Capture] for the required channels.

Go To Cue Timing

[Go To Cue] uses go-to-cue timing established in *Setup, page 79*. You can use a [Go To Cue] instruction with different timing options as follows:

- **[Go To Cue] [2] [Time] [1] [Enter]** - this command would take you to cue 2 in 1 second.
- **[Go to Cue] [Next] [Time] [3] [Enter]** - this command would take you to the next cue in the selected list in three seconds.
- **[Go to Cue] [Last] [Time] [2] [Enter]** - this command would take you to the previous cue in the selected list in two seconds.
- **[Go To Cue] [8] [Time] [Enter]** - this command would take you to cue 8 using all timing value stored in cue 8.

Other Go To Cue options

When [Go to Cue] is pressed, the softkeys in the CIA are changed to provide Go to Cue modifiers to enhance your playback ability.

From these softkeys, you can specify that when going to a cue, only some elements of that cue will be played back. Specifically you can choose to play back:

- single parameter channels only (conventionals),
    - ***[GoTo Cue] [1] {SingleParam} [Enter]***
- multiple parameter channels only (moving lights),
    - ***[GoTo Cue] [2] {MultiParam} [Enter]***
- move instructions only,
    - ***[GoTo Cue] [3] {MovesOnly} [Enter]***
- or you can choose play back a cue and withhold any link (follow, hang, execute instructions) it may contain.
    - ***[GoTo Cue] [4] {MinusLinks} [Enter]***

These can be combined within the command line as well:

- ***[Go To Cue] [1] {MultiParam} {MovesOnly} [Enter]***

Virtual Faders

You can have access to multiple cue lists at once by using the virtual faders (see *Virtual Faders, page 29*). This will give you the ability to run multiple cue lists or submasters from multiple faders at the same time.

Assigning Faders

Playbacks and submasters can be defined on the virtual faders in setup (*Setup, page 79*). The location of playbacks and submasters can also be defined as the contents of those targets are stored. You cannot define grand masters in this manner, they must be defined in setup.

If a fader is an empty playback or an empty submaster, a cue can be loaded to that location by selecting the cue from the command line and clicking the associated [Load] key. The fader will then be automatically assigned as a playback, using the lowest unused playback number.

Once a cue list is loaded to a fader, either manually or by default, storing to that cue list automatically plays the cue back on the appropriate fader, when auto playback on record is enabled in **Setup**.

When a cue list is loaded to a playback, all cue attributes of that cue list are in effect. When a new cue list is loaded, any fader attributes that can be set as direct action from the facepanel (such as filters, timing disable, etc.) are maintained. Loading a new cue does not change the manual fader attributes.

With Auto Playback Enabled

“Auto Playback” is a record function enabled in setup (*Setup, page 79*), that automatically executes cues recorded in live on playback faders. When the cue is executed on the playback fader, any manual parameters involved in the record operation are automatically released to the cue and all other values stored in the cue are owned by that cue.

When the first cue is stored on Ion, that cue automatically loads on the master fader.

For Example:

> If cue list 3 is stored before cue list 1, cue list 3 will automatically load on the master fader pair. To change the assignment, making cue list 1 the priority cue list, you can manually load cue list 1 to the master fader pair as described below.

Assigning Playback Faders Manually

To load a new cue into the pending file of a playback fader, when “Auto Playback” is disabled in setup or when you want to move a cue list to a different fader, first specify that cue on the command line, press **[Enter]**, then click or press the associated **[Load]** button for the destination playback fader.

- **[Cue] [4] [Enter] [Load]** - changes the selected cue and loads it to the associated fader. This action assumes cue 4 is from the same cue list as is currently selected.
- **[Cue] [3] [/] [1] [Enter] [Load]** - changes the selected cue and loads it to the associated fader.

Changing Virtual Fader Pages

Ion has 30 pages of ten virtual faders each. You can page through the 30 available pages of faders by clicking the desired page in the virtual fader display. Click the arrow buttons to advance through the page number buttons until you find the desired page.

Playback Fader Controls

In Ion, many of the buttons mentioned below exist as softkeys. In order to have access to some of these keys, press and hold **[Fader Control]**. The softkeys will change to display the fader control keys. You may press **[More SK]** if the green LED is illuminated, to view additional fader control buttons. This must be done while holding down [Fader Control].

Go and Stop/Back

Using [Go]

The [Go] button is used to execute the cue currently in the pending file of the associated fader. When **[Go]** is pressed, all parameters assume their required positions in the recorded times, unless they have been recorded with manual timing.

Using [Stop/Back]

All fader activity can be instantly stopped mid-transition by pressing the **[Stop/Back]** button for the required fader. To resume the cue, press the **[Go]** button. To fade to the previous cue on that fader, using default “back” timing, press the **[Stop/Back]** button again from this state.

When a cue on the playback fader is complete, the first press of [Stop/Back] will go back to the previous cue. Subsequent presses of [Stop/Back] will step backwards sequentially through the cue list from that point. [Stop/Back] uses default back time as established in **Setup.** *See “Cue Settings” on page 81.* Or you can back into the previous cue using specific timing by pressing:

- **[Go to Cue] [Last] [Time]** [n] **[Enter]**.

[Go To Cue 0]

You can use the [Go To Cue 0] button, located with the playback controls, in conjunction with a fader load button, to send a specific cue list to cue 0. This action does not use the command line. To do this:

Step 1: Press and hold **[Fader Controls]**
Step 2: If necessary, press **[More SK]** until {Go ToQ 0} is visible in the LCD.
Step 3: Press and release **{Go To Cue 0}**. Continue holding [Fader Controls].
Step 4: Press or click **[Load]** for the desired fader. The cue list will go to cue 0.
Step 5: Release **[Fader Controls]**.

For more information on this action, see *Using Go To Cue 0, page 169*.

Using Manual Control

There are three types of manual control for playbacks:

- Cues can be stored with manual timing. When cues have stored manual timing, the default behavior of the fader is to control those manual values.
- Cues can be captured for manual intensity control only. This is possible only when the associated cue has no manual timing values.
- Cues can be manually overridden using the [Man Override] & [Load] feature which captures all parameter transitions.

In each of these cases, follow time counts down from [Go]. The hang time will be started when the potentiometer reaches full or when the last parameter reaches its end state from timing, whichever comes last.

Manual Timing Control

Manual timing can be set for any parameter or group of parameters. The potentiometer is then used to control the progress of a transition.

For Example:

> Assume the active cue contains an instruction to set color at 5 for channel 1.
>
> The pending cue contains an instruction to set channel 1 to color 12 and the color parameter has a manual time. Press **[Go]** to activate the cue. Channel 1 color does not change.
>
> As you move the fader up manually, channel 1 color moves proportionally from color 5 to color 12. Any parameters with timing will start their moves at the press of [Go] and be unaffected by the manual control.

To program a channel manual time:

- **[1] {Color} [Time] {Manual} [Enter]** - assigns a manual time to channel 1. This must be recorded or updated to a cue.

Manual timing can also be set at a cue category level:

- **[Record] [Cue] [5] [Time] {Manual} [Enter]**

Manual Intensity Override

An intensity transition may be taken over manually and the transition captured by dropping the fader down until it reaches the percentage of cue completion (i.e. if the cue is 50% complete, when the fader is manually dropped to 50%, the intensity transitions will be captured and the intensity portion of the cue completed by moving the fader manually between 50% and full or anywhere in between). If the fader is dropped below 50%, the fader will fade all intensity values proportionally from their captured values to their previous values.

If a fade is captured and the faders are not reset to 100% prior to the next press of the [Go] button, the fader will automatically reset to 100% upon cue execution. Alternatively, you can set the fader to 0% before executing the next cue to capture the cue for manual intensity control when the [Go] button is pressed. Intensity control is released from the fader when the cue is considered complete (when the fader is brought back to 100%).

This is true unless the cue has a “hold” attribute. You could provide a “hold” on a per cue basis to allow the cue’s intensity (or whatever the fader potentiometer was manually controlling) to remain under the control of the potentiometer even after it reaches full. The “hold” will remain until the next cue is executed. When held, the potentiometers may be used to drop any values with manual timing, even after the cue has reached full. The hold attribute is released when [Go] is pressed to activate the next cue in the list.

If a pending cue has any manual control properties, you may either preset the fader to zero or, if it is a virtual fader, the console will automatically set the fader to zero when the [Go] button is pressed. The master fader pair must be manually set.

Manual intensity override is not possible if there is any manual timing in the cue, as the potentiometer is already occupied with that control.

Manual Override

Manual override allows the potentiometer of the associated fader to control all parameters in a transition state on that fader. When **[Fader Controls] {Man Override}** & **[Load]** are pressed, all activity on that fader is frozen.

The potentiometer is used to manually complete the cue transition for all parameters. If the fader is operating in a paired mode, the left fader controls the intensity upfade and all non-intensity parameters, while the right fader controls all intensity downfade actions. Manual control override automatically releases when the cue is complete.

A group of faders can be collected for manual override by pressing or clicking **[Man Override]** & **[Load]** (continue adding faders by clicking the associated **[Load]** buttons).

Using Assert (playback button)

Use {Assert} & [Load] for the associated fader to re-run the active cue in that fader, following the same rules as [Go To Cue]. Assert can be used to regain control of all cue contents, apply a newly set independent state to the associated fader, or make any changes in blind to an active cue on stage.

When [Fader Controls] {Assert} & [Load] are used together, the entire contents of the cue are replayed. You can assert just certain elements of a cue by using the command line.

Following are some examples of asserting elements of a cue from the command line:

- **[**channel list**] [Cue] [5] [Assert] [Enter]** - asserts the selected channels with values from cue 5. Note that cue 5 must be active for this command to execute.
- **[**channel list**] [Color] [Cue] [1] [Assert] [Enter]** - asserts the color values from cue 1 for the selected channels.

Using Timing Disable

The {Time Disable} softkey, used with [Fader Controls] and [Load], causes timing data to be ignored for any cues that are activated on the associated playback fader. When a playback fader is in timing disable mode, you will notice “TD” in the associated fader display.

To release the playback fader from time disable mode, press **[Fader Controls] {Time Disable}** & **[Load]** again.

Using Freeze

{Freeze} can be used to halt all playback activity on any active faders. To activate a freeze for only a specific fader, press **[Fader Controls] {Freeze}** & **[Load]**.

There are two ways to remove the freeze command:

- Press **{Freeze}** & **[Load]** again for the specific faders to unfreeze the activity.
- Press **{Assert}** & **[Load]** or **[Go]** or **[Stop/Back]** for the specific faders to resume the activity.

You may freeze and unfreeze cues and effects from the command line.

- **[Effect] [2] [Fader Controls] {Freeze} [Enter]** - to freeze effect 2. Freezing a specific effect is different from stopping an effect. Freeze will stop the effect exactly where it is.
- **[Effect] [6] [thru] [9] [Fader Controls] {Freeze} [Enter]** - to freeze a specified range of effects.

When an effect is in freeze mode, you can use the same command to unfreeze:

- **[Effect] [2] [Fader Controls] {Freeze} [Enter]**
- **[Effect] [6] [thru] [9] [Fader Controls] {Freeze} [Enter]**

Using Stop Effect

The {Stop Effect} softkey can be used to stop all effects from operating on any or all faders, or it may be used with the control keypad to stop a specific effect.

- To stop all effects on a fader, press **[Fader Controls] {Stop Effect}** & **[Load]** of the associated fader.
- To stop a specific effect regardless of the fader it is operating on, press **[Effect] [2] [Fader Controls] {Stop Effect} [Enter]**.

When an effect is stopped, all impact of the effect is removed and the stage output is as though the effect has never been activated.

Release a Fader

To release a fader, thereby clearing all cues from that fader, press **[Fader Controls] {Release}** & **[Load]** for the associated fader. When a fader is unloaded, control is returned to the master fader. If there are no values for unloaded channels from the master fader, channels are set to default.

Channels return to the master fader using the category level timing of the active cue on that fader. If the master fader is released, the fader is cleared and any intensity values owned by that fader are set to zero, any non-intensity parameters remain in their current state.

All fader attributes (timing disable, filters, and so on) are cleared by the release action.

Turning a Fader Off

To turn a fader off, press **[Fader Controls] {Off}** & **[Load]** of the associated fader. When a fader is turned off, any intensities owned by that fader are driven to zero and any repetitive action (from effects for example) are stopped. All parameters remain in their current state. The fader remains with the current cue loaded, just shown as contributing no current values to the stage. All channels that were previously owned by that fader are now available for control by other sources.

When the next cue is activated from any other fader, any parameters previously owned by the off-fader will fade to the new cue (if they have an instruction in that cue). If they do not have an instruction in that cue, intensity will fade out and non-intensity parameters remain where they are.

Press **{Off} & [Load]** again to turn the associated fader back on. The active cue is replayed, following the rules for assert.

You can turn the fader back on by pressing the Go or Stop/Back button on the fader, or by executing a [Go to Cue] for the cue list on that fader, provided the cue list is not already active on another playback.

Using Rate Override

To collect a playback fader for rate control, press **[Fader Controls] {Rate}** & **[Load]** for the required fader. A subset of faders can be collected by pressing and holding **{Rate}** while clicking the **[Load]** button for the associated faders you would like to add.

Use the rate encoder to adjust the rate dynamically. The default is 100%, which is real time (example: 5 seconds = 5 seconds). Decrease the percentage to slow the cue down. Setting the rate to 0% will stop the cue. Increase the percentage to speed up the event.

Following are some examples of rate:

- A 50% decrease rate applied to a 5 second event will play the cue in 10 seconds.
- A 200% increase rate applied to a 5 second event will play the cue in 2.5 seconds.

The top rate adjustment is 2000%. All timing values associated with a cue (including any follow or hang times) are affected by the rate modification proportionally.

Rate override resets to 100% when the cue with the override is complete, unless it has been linked with a follow or hang time. If cues are linked for automatic activation by a follow or hang time, the proportional rate value will continue until a cue is activated manually.

If a cue is complete, any rate adjustment applied affects the cue in the pending file. When that cue is subsequently activated, the adjusted rate is used to direct timing.

Chapter 16

Advanced Manual Control

This chapter describes some more advanced features for manual control functions. These features can save you valuable programming time.

This chapter contains the following sections:

- ***Using [Copy To]*** 190
- ***Using [Recall From]*** 191
- ***Using {Make Null}*** 192
- ***Using {Make Manual}*** 193
- ***Using {Make Absolute}*** 193
- ***Using [Capture]*** 194

Using [Copy To]

[Copy To] allows you to copy data from one channel to another, either within the current working mode or to a different record target. [Copy To] works much like [Recall From], but in the opposite direction, [Copy To] forces data *to* a channel from the selected channel, whereas [Recall From] pulls it *from* a channel to the selected channel.

You may copy all parameter data for selected channels, or by using the IFCB category buttons or parameter buttons, you may copy subsets of channel data. Entire cues, cue ranges and cue lists can be copied to other locations.

When copying information at a channel level, discrete timing is not included unless specified. When copying entire cue(s), all timing data is copied. When referenced data is copied, if the copy target also has data in the reference that is being copied, the target will be placed in that reference (such as, CP 1), at its stored values. If the copy target is not included in the reference, absolute data will be copied to the target, and not the reference.

Below are some examples of copy commands from record targets. This command is very versatile and the following list is far from exhaustive:

- **[2] [Copy To] [Cue] [5] [Enter]** - copies all information for channel 2 to cue 5. Any discrete timing data is not copied.
- **[2] [+] [Time] [Copy To] [Cue] [5] [Enter] -** As above, but timing data is included.
- **[2] [Time] [Copy To] [Cue] [5] [Enter]** - Copies just the timing data for all parameters of channel 2 to cue 5.
- **[2] [-] [Focus] [8Copy To] [Cue] [5] [Enter]** - Copies all parameter data for channel 2, other than focus, to cue 5.
- **[Group] [3] [Copy To] [Preset] [6] [Enter]** - copies current information for group 3 to preset 6.
- **[3] Copy to] [6] [Cue] [y] [Enter]** - copies the data from channel 3 to channel 6 in cue 8.
- **[3] [Copy to] [4] [thru] [9] [Enter]** - copies the data from channel 3 to channels 4 thru 9.
- **[3] [Copy to] [8] [Cue] [2] [/] [1] [Cue Only/Track] [Enter]** - copies the data from channel 3 to channel 8 in cue 2/1 and takes exception to the track/cue only settings in regard to subsequent cues in cue list 2.
- **[Cue] [2] [/] [Copy to] [Cue] [7] [/] [Enter]** - copies all of the contents of cue list 2 to cue list 7.
- **[Cue] [1] [/] [1] [thru] [1] [0] [Copy To] [Cue] [5] [/] [5] <thru> [Enter]** - copies cues 1 thru 10 from cue list 1 to cue list 5, starting with cue 5.

Using [Recall From]

[Recall From] is similar to [Copy To], except that it retrieves data from other locations, and can be used only for a channel list recalling from the same channel list but in a different location (for example, a cue). [Recall From] is essentially a “copy from” command.

You may recall all parameter data for selected channels, or by using the IFCB category buttons or parameter buttons, you may recall subsets of channel data.

When recalling information, discrete timing is not included unless specified.

Below are some examples of recall commands from record targets:

- **[2] [Recall From] <Cue> [5] [Enter]** - recalls all recorded data from cue 5 for channel 2.
- **[2] [-] [Focus] [Recall From] <Cue> [5] [Enter]** - recalls all data for channel 2 from cue 5, except focus (pan/tilt - XYZ) data.
- **[2] [Focus] [+] [Time] [Recall From] <Cue> [5] [Enter]** - recalls only focus data for channel 2 (including timing) from cue 5.
- **[Group] [3] [Color] [Focus] [Recall From] [Preset] [6] [Enter]** - recalls the color and focus information from preset 6 for the channels in group 3. Could also be used with a channel selection set instead of a group.
- **[Group] [3] [Color] [Recall From] <Cue> [7] [Make Absolute] [Enter]** - recalls color data for group 3 from cue 7 and breaks any references to record targets.
- **[2] [Recall From] [Sub] [4] [Enter]** - recalls all recorded intensity data from sub 4 for channel 2.

Using {Make Null}

The {Make Null} softkey can be used to withhold parameter data from record or update actions in live, and remove parameter data from record targets in blind. {Make Null} is applied using channel selection and can impact entire channels, individual parameters, or parameter categories.

In Live

When you apply a {Make Null} instruction to channels or parameters in live, channel data is still visible onstage, but that data is essentially rendered invisible to record commands. Similar to filters (see *Record Filters, page 174*), {Make Null} acts as an “ignore” instruction in live, not a remove instruction. When channel data is nulled, the values for that data in the live display turn grey and an “N” appears next to the data field.

{Make Null} differs from park in that you can still manipulate data onstage (through manual control or through playback) but that data will be unavailable for record actions.

Some examples of using {Make Null} in live are:

- **[1] [Thru] [5] {Make Null} [Enter]** - converts all parameters of channels 1-5 into null data.
- **[2] {Color} {Make Null} [Enter]** - changes only color data for channel 2 to null data.
- **[9] [Thru] [5] {Pan} {Make Null} [Enter]** - changes only the pan data for channels 5-9 to null.

Null instructions are lifted in two different ways. First, as {Make Null} is a toggle state, it is possible to reselect the channel and parameter followed by {Make Null} [Enter]. This lifts the null state.

Additionally, a Go To Cue instruction will remove the null state.

In Blind

When applied in blind, {Make Null} can be used to mask instructions in a cue *after* it has already been stored. A {Make Null} instruction can also be applied to channels or parameters in palettes, presets, and submasters, thereby removing the data from the target entirely, in the same way that [At] [Enter] does.

When applied to channels or parameters in cues, {Make Null} doesn’t remove the data from the cue, it simply makes it unavailable for playback. It has the same effect on move instructions that it has on tracked values.

Some examples of using {Make Null} in blind are:

- **[Color Palette] [1] [Enter] [3] {Magenta} {Make Null} [Enter]** - removes all magenta parameter data for channel 3 from color palette 1.
- **[Preset] [5] [Thru] [9] [Enter] {Intensity} {Make Null} [Enter]** - removes all intensity data for all channels in presets 5-9.
- **[Cue] [8] [Enter] [2] [Thru] [7] {Make Null} [Enter]** - nulls all data for channels 2-7 in cue 8.
- **[Cue] [9] [Enter] {Intensity} [Make Null] Enter]** - nulls all intensity data for all channels in cue 9.

In the cue scenarios above, {Make Null} differs from using [At] [Enter] in that instead of allowing values established in previous cues to track in, {Make Null} both restricts the recorded data from playing back and prevents other values from tracking in. Therefore, if the cue were executed as an out of sequence cue or asserted, no data would play back or track in for any nulled values.

Using {Make Manual}

The {Make Manual} softkey can be used to convert cue or submaster data into manual values, allowing it to be included in [Record], [Record Only], and [Update] operations.

- **[5] {Make Manual} [Enter]** - selects channel 5 and makes all of its current parameter settings manual data.
- **[8] {Focus} {Make Manual} [Enter]** - selects channel 5 and makes all of its focus data manual.
- **[9] [Thru] [3] {Color} {Intensity} {Make Manual} [Enter]** - selects channels 3-9 and makes their color and intensity values manual.

Using {Make Absolute}

Referenced data can be transformed into absolute data using the {Make Absolute} softkey. This softkey is available in live or blind. Referenced data is channel or parameter data that is derived from a palette or preset. {Make Absolute} can be used to leave a parameter unchanged, but break its palette or preset reference.

The following examples illustrate how to change referenced data into absolute data.

- **[4] {Make Absolute} [Enter]** - selects channel 4 and makes any referenced data for that channel absolute data.
- **[7] {Color} {Make Absolute} [Enter]** - selects channel 7 and makes its color data absolute.
- **[3] [thru] [9] {Color} {Intensity} {Make Absolute} [Enter]** - selects channels 3-9 and makes their color and intensity data absolute.

In each of these examples, the channel display will change to show the result of the command. Wherever the reference was previously indicated (IP, FP, CP, BP, Pr), an absolute value (numerical) will be seen.

In live, data that is changed to absolute is also made manual, thereby requiring a record or update instruction if the results are to be maintained.

{Make Absolute} can also be used in conjunction with an update command, allowing a cue to be updated while also breaking the reference to palettes or presets that were manually modified.

For example, [Update] {Make Absolute} [Enter] will update the active record target. Any manual values that were modifications to a palette or preset stored in the cue will be updated as absolute data in the cue. The reference will be discarded.

Using [Capture]

Capture is a manual independent state. Any captured channel parameter data will be unaffected by playback, but will respond to manual control operations.

When channels are selected, **[Capture] [Enter]** captures all parameters of those channels. They will remain unavailable for playback or submaster override until they are released from the captured state. Capture is a toggle state, so to release parameters from a captured state, press **[Capture] [Enter]** again.

For Example:

- ***[1] [Thru] [9] [At] [Full] [Capture] [Enter]***

A “C” is displayed next to the captured parameters (intensity) in the channel display. The selected channels are now captured and are unavailable for playback or submaster instructions until they are released from capture.

You may also capture specific parameters of a channel using the parameter buttons in the CIA.

For Example:

- ***[7] [Focus] [Capture] [Enter]***

If a group of channels are selected, and some of those channels are captured and some are not, the first press of [Capture] *releases* all channels from the captured state and the second press captures all manual settings for the selected channels.

Uncaptured channels remain at their current values until restored to previous values or a new instruction is provided. You may restore channels to their background or default state using the [Sneak] [Enter] feature (see *Sneak, page 107*). Or you may leave them in a manual state until a new instruction is received.

It is also possible to “latch” capture on. This will automatically capture all manual changes as they are made. Pressing **[Capture] [Capture] [Enter]** automatically captures subsequent manual changes. The command line will read “Capture Enable * and the Capture LED will illuminate. To remove the capture latch, press [Capture] [Capture] [Enter] again.

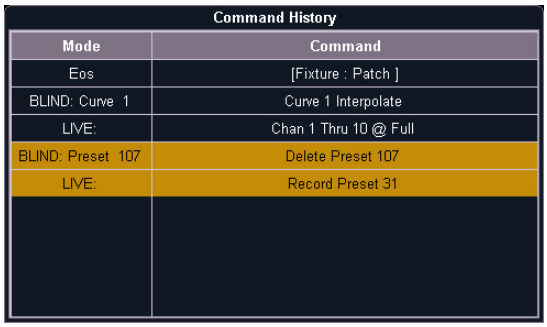
Using [Undo]

Undo is a method to reverse or “undo” certain operations performed in the software.You can use [Undo] to reverse any command that results in a change to data that would be saved to the show file or any command that changes manual levels in live. Commands that can be reversed using [Undo] are:

- Record and update operations
- Delete commands
- Manual level changes

If there are any commands in the command line, pressing [Undo] once clears the command line. Once the command line is empty, pressing [Undo] will start the undo process.

When [Undo] is pressed from an empty command line, the command history display will open in the CIA and the most recent completed command is highlighted in gold. If you press [Enter], you will undo your last command.



You may use the page arrow keys to select multiple commands. When [Enter] is pressed, all highlighted commands will be undone and subsequently removed from the command history.

After an Undo has been performed, a {Redo} button will appear in the command history. You may press this button followed by [Enter] and the last undo will be “redone” to reinstate the removed commands.

Note: *Not all commands can be completely undone, particularly “Go To Cue”.*

Manual attributes placed on live channels, such as discrete timing, blocks, and marks cannot be undone.

Command History

Command histories are kept for each editing session which begins when the console logs on to the network or when you load a new show file. Each user builds an individual command history, specific to the commands *they* have entered.

You can open the command history at any time by pressing **<More Sk> {Cmd History}**.

Commands that do not affect manual input or record targets (loading a cue, running a cue, or moving a submaster) are not included in the command history.

Chapter 17

Multipart Cues

Cues can be divided into up to 20 parts, thereby constituting a multipart cue. This chapter describes the methods used to create and edit multipart cues.

This chapter contains the following sections:

- ***Record a Multipart Cue in Live*** 198
- ***Storing a Multipart Cue in Blind*** 201

About Multipart Cues

Cues can be divided into up to 20 parts. Each part can have its own channels, parameters, levels and timing information. Multipart cues can be stored in live or blind using the same conventions to record a standard cue.

There are three basic ways to create a multipart cue. You can build a multipart cue part-by-part in live, you can break an existing cue into multipart cues in live, or you can break an existing cue apart in blind

A channel or parameter can only be provided an instruction once in a multipart cue. For example, it isn't possible to adjust color for channel 1 in Cue 1 Part 1 and then also provide a different instruction for channel 1 color in Cue 1 Part 8.

Default timing is drawn from the cue level timing defaults established in **Setup**, although you may assign discrete timing to channels in each part as you would for a single part cue.

Record a Multipart Cue in Live

Storing a multipart cue in live is accomplished in similar fashion to storing a single part cue. However, rather than storing the entire cue, you select and store just the channels that you want in each part.

Please note that there are a variety of different ways and different orders to go about creating a multipart cue. The following examples represent some, but not all, of those ways.

Creating a New Multipart Cue in Live

Build part-by part

Make desired changes to the stage state. If all of the changes that you have made are to go into a part, press:

- **[Record Only] [Cue] [2] [Part] [1] [Enter]**

Continue making changes and storing parts as you go.

Build parts from cue end state

In most instances, you will create the end state of the cue and then break it into parts. To do this, you use selective storing commands, as follows:

- **[**channel or parameter selection**] [Record] (**or [Record Only]**) [n] [Part] [a] [Enter]**
- **[**channel or parameter selection**] [Record] (**or [Record Only]**) [Part] [b] [Enter]**

Each part can contain its own cue level timing and other attributes. Follow/Hang, Link and Loop, and Allfade commands can be placed at the cue level only—they cannot be placed on a part. Also, through the channel selection, you can put channel parameters into different parts.

Part 1 of any multipart cue is where all unassigned move instructions will reside. Therefore, if the body of the cue (which is the normal behavior) is to be in part 1, you can simply select the channel or parameter list that you wish to place in parts 2 and higher. Until you specify channels with move instructions into a later part, they will reside in part 1.

Setting Multipart Cue Attributes

Cue attributes, such as [Time], [Delay], [Block], [Assert], [Label], [Hold] and [Rate], [Mark], and [AutoMark Off] can be assigned in part cues. They are stored and function exactly as they do in single part cues.

Cue part attributes can be defined as the parts are recorded, or they can be added after the part has been created. For example:

- **[Record] [Cue] [2] [Part] [1] [Delay] [8] [Enter]**
- **[Cue] [4] [Part] [3] {Color} [Time] [6] [Enter]**
- **[Cue] [8] [Part] [9] {AutoMark Off} [Enter]**
- **[Record Only] [Cue] [5] [Part] [2] [Assert] [Enter]**

For more on cue attributes, see *Assigning Cue Attributes, page 143*.

Using Update in Live

Updating a multipart cue is generally the same process as updating a single part cue, except you will provide a specific part cue number in the update command.

Various referenced data, such as palettes or presets, can be assigned to build a multipart cue. If you have made changes to referenced data within a multipart cue, thereby creating manual data, pressing **[Update] [Enter]** updates both the multipart cue and any referenced data with the new levels, as it does with single part cues.

You can update a part of a multipart cue with only selected parameters as well.

For Example:

Assume you have written cue 1, which is a multipart cue and is active. Part 2 includes channels 1 through 5 referencing intensity palette 2 which is set at 25%. Select channels 1 through 5 and change the intensity value to 21%. The data in live will indicate the new levels in red, and an “R” is displayed to indicate the reference has been broken.

To update cue 1 part 2, including the new intensity levels, breaking the reference to the intensity palette, press:

- ***[1] [Thru] [5] {Make Absolute} [Enter]***
- ***[Update] <Cue> <1> [Part] [2] [Enter]***

To update cue 1 part 2 *and* the referenced palette with the new levels:

- ***[1] [Thru] [5] [Intensity] [Update] <Cue> <1> [Part] [2] [Enter]***

For Example:

When cue 2 is active, select channels 1 through 5 and set new levels for the color scrollers. Update only part 4 of the multipart cue 2 with the new scroller levels.

- ***[1] [Thru] [5] [Scroller] [Update] [Part] [4] [Enter]***

Storing a Multipart Cue in Blind

Note: *Edits in blind take effect immediately, they do not require a [Record] or [Update] command.*

Changing a Single Part Cue to a Multipart Cue

When working in blind, more often than not you will be breaking a single part cue into a multipart cue. It is quite possible to create a new cue in blind and follow the exact same process, except in addition to pulling channel parameters into parts, you will also be providing them with move instructions or block commands. It is worth noting that tracked instructions do not belong to any specific part of a multipart cue.

Select the cue you wish to break apart and specify the first part you wish to create. Part 1 is generally where the body of the cue resides. Therefore, if you specify any part other than part 1, all of the move instructions in the cue are placed in part 1.

Begin by selecting any channels that you wish to move into some part other than part 1.

- **[1] [Thru] [5] [Part] [2] [Enter]**
- **[6] [Thru] [1] [0] {Intensity} [Part] [3] [Enter]**
- **[6] [Thru] [1] [0] {Color} [Part] [4] [Enter]** - and so on.

As you create each part, that part is now selected. It is possible to select the channel parameter you want and press **[Part] [Enter]** to pull that data into the selected part.

Note: *When breaking a cue into a multipart cue in blind, the [Part] button is a required instruction. Channel selection will not automatically assign a channel into a part. Use of the [Part] key allows you to add only specific channel parameters to the part. For example:*

- [5] [Thru] [9] {Color} [Part] [Enter]

Changing a Multipart Cue to a Standard Cue

To change a multipart cue to a standard cue, delete all of the parts of the cue.

For Example:

Cue 4 is a 3 part cue that include channels 1 through 20. To change cue 4 back to a standard single cue:

- ***[Delete] [Part] [1] [Thru] [3] [Enter]***

Deleting a Part from a Multipart Cue

When you delete parts of a multipart cue, any move instructions in the deleted part are moved to the first available part. If you want to delete move instructions out of a cue part, you have to select the channels and [at] [enter] or null them.

- ***[Delete] <Cue> [1] [Part] [1] [Enter] [Enter]***
- ***[Delete] <Cue> [6] [Part] [1] [Cue Only/Track] [Enter] [Enter]***
- ***[Delete] [Part] [1] [+] [2] [Enter] [Enter]***
- ***[Delete] [Part] [1] [thru] [3] [Enter] [Enter]***

Chapter 18

Creating and Using Effects

Effects are a method within Ion to provide dynamic, repetitive action to channels. This chapter explains the different types of effects, and how to use them.

This chapter contains the following sections:

- ***About Effects*** 204
- ***The Effect List*** 204
- ***Effect Status Display*** 209
- ***Step Effects*** 210
- ***Absolute Effects*** 213
- ***Relative Effects*** 215
- ***Program a new relative effect*** 217
- ***Apply an Existing Effect*** 218

About Effects

Effects are manual control functions that can be applied to a channel parameter and then included in cues. Cues can contain both standard transitions for some channels and parameters and effects for the same or other channels and parameters.

A single channel parameter cannot have more than one effect applied at any time. However, a channel may have one effect running on one parameter and another effect running on a different parameter.

Effects have user defined properties and attributes which are applied to the effects whenever they are used in cues. Effects also have cue level overrides, which allow you to use an effect in multiple locations, and modify its size, shape or rate in individual cues.

Within Ion, effects are broken up into three fundamental behavior types; Step, Absolute, and Relative effects.

The Effect List

At any time you may press **[Effect] [Effect]** to view the effect list. Any recorded effects will be displayed here. The effect list is a blind view and any changes made in this view are automatically stored; a record command is not required.

Notice that there are effects existing in this list prior to any being recorded. Effects 901-916 are preprogrammed relative effects that are automatically available to you (see *Relative Effects, page 215*).

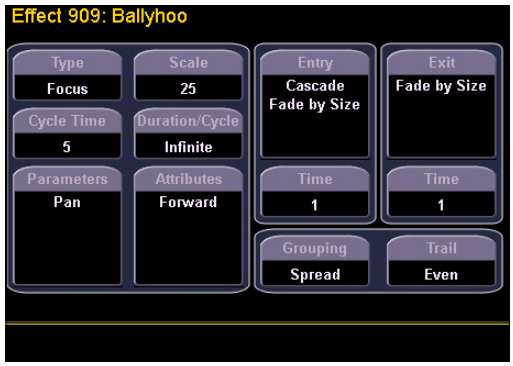
To navigate this list use the navigation keys as described in *Display Control and Navigation, page 31* or select the effect number you wish to work with. Notice that when you select the effect list, the CIA changes to display the information for the currently selected effect.

Effect	Label	Type	Entry	Exit	Dur/Cyc	Scale
1		Absolute	Cascade	Immediate	Infinite	
901		StepBased	Cascade	Immediate	Infinite	
902	Square	Focus	Cascade	Immediate	Infinite	25
903	Figure 8	Focus	Cascade	Immediate	Infinite	25
904	Can Can	Linear	Cascade	Immediate	Infinite	25
905	Triangle	Focus	Cascade	Immediate	Infinite	25
906	Spiral	Focus	Cascade	Immediate	Infinite	25
907	Reverse Sqr	Focus	Cascade	Immediate	Infinite	25
908	Reverse Circle	Focus	Cascade	Immediate	Infinite	25
909	Ballyhoo	Focus	Cascade	Immediate	Infinite	25
910	Color Smooth	Linear	Cascade	Immediate	Infinite	25
911	Color Fade Linear	Linear	Cascade	Immediate	Infinite	25
912	Color Step	Linear	Cascade	Immediate	Infinite	25
913	Bump Color	Linear	Cascade	Immediate	Infinite	25
914	Hue-Sat Fade	Color	Cascade	Immediate	Infinite	25
915	Ramp	Linear	Cascade	Immediate	Infinite	25
916	Inverted Ramp	Linear	Cascade	Immediate	Infinite	25

Effects Editor

When viewing the effect list, the selected effect is displayed in the CIA. The effect properties and attributes are shown in categorized buttons in the CIA. To change any property or attribute, press the corresponding button and enter data as required.

The properties display of the effects editor is shown below and definitions of properties follow.



Type

Defines the effect type: step-based, absolute, or relative (linear, focus, or color). To change the type, press **{Type}** and then press the desired effect type in the buttons to the left.

- ***<Effect> [1] {Type} {Step based} [Enter]***

Scale

Applies only to relative effects. This modifies the amount the pattern is offset from the current parameter values. The scale is expressed as a percentage increase or decrease (25 = 25% of the programmed value).

- ***{Scale} [3] [0] [Enter]*** *or you may adjust this using the "Scale" encoder.*

Cycle Time

Provides a cumulative time to complete one full iteration of an effect. In relative effects, the cycle time determines the length of time required for one channel to complete the cycle.

In absolute and step-based effects, the cycle time determines the time required to complete one full iteration of the effect. In these effect types, modifying the cycle time changes the timing values proportionally within the effect itself.

To change the cycle time, press **{Cycle Time}** and then enter the desired time (in minutes and seconds) from the keypad, followed by **[Enter]**. This can also be adjusted from the encoder.

Duration/Cycle

This determines the length of time an effect will run. To specify, press **{Duration/Cycle}** and then choose the desired method from the buttons that appear to the left. The options are:

- {Infinite} - for step and absolute effects, the effect will run until the channel is provided a new instruction or the effect is stopped. Relative effects with an infinite duration will run until a stop flag is applied.
- {Duration} - the effect will run for a set amount of time given in minutes and seconds. Enter the time from the keypad.
- {Num cycles} - the effect will run for a set number of iterations. Enter the number using the keypad.
    - ***{Duration/Cycles} {Num Cycles} [1] [0] [Enter]***

Parameters

This allows you to select which parameters will be involved in the selected effect, by default. By entering a value here, you do not need to specify the required parameter when placing an effect on a channel group.

To add or remove parameters to the effect, press **{Parameters}** and then select the desired parameters from the buttons that appear to the left.

- ***{Parameters} {Iris} [Enter]***

Attributes

These determine the basic behavior of the effect. Attributes include behaviors such as forward, reverse, bounce, positive, negative, and random grouping or random rate. The attributes are slightly different between step, absolute and relative effects.

- **Forward** - the effect will run in the programmed direction (the arrow on the pattern editor indicates “forward” for pattern effects, step and absolute effects will follow numerical order).
- **Reverse** - effect will run in the opposite direction of forward or reverse numerical direction. Forward and Reverse are mutually exclusive settings.
- **Bounce** - effect will run first in forward, then in reverse. Subsequent passes alternate between forward and reverse.
- **Positive** - effect will run the steps (on state and off state) as programmed. This is applicable to step effects only.
- **Negative** - inverts the on state and off state for the effect. This is applicable to step effects only.
- **Random Grouping** - channel distribution or step order (depending on the type of effect) are applied in a continuously random fashion.
- **Random Rate -** this overrides the cycle time of the effect. Random Rate is applied in a range (for example 5- thru 150).

Play with these behaviors to see how they alter your effect.

Entry

Establishes at what time and how channels will enter the effect. To change the entry method press **{Entry}** and then choose a method from the buttons to the left. Entry modes vary by effect type. The options are:

- {Cascade} - channels enter the effect according to the trail and cycle time values (if applicable).
- {Immediate} - all channels enter the effect instantaneously.
- {Fade by Size} - the effect will achieve its full value as allowed by the pattern or step or absolute values using the In Time.
- {Fade by Size and Rate} - the effect will achieve its full value as allowed by the pattern or step or absolute values and ramp up to full speed using the In Time.

Exit

Establishes at what time and how channels will exit the effect. To change the exit method press **{Exit}** and then choose a method from the buttons to the left. Exit modes vary by effect type and how the effect is stopped. The options are:

- {Cascade} - channels leave the effect when they have completed their last pass (number of cycles) or when they do not have enough time to make a final complete pass (duration).
- {Immediate} - all channels exit the effect instantaneously.
- {Fade by Size} - when the effect is exited, values will return to their background state while still running using the exit time.
- {Fade by Size and Rate} - when the effected is exited, channels will stop running the effect and return to their background state using the exit time.
- {Stop and Fade} - when the effected is exited, channels will stop running the effect and return to their background state using the exit time.
- {Stop and Hold} - when the effect is existed, channels will halt exactly where the effect left them.

Time (Entry or Exit)

These fields establish the length of time for channels to enter or exit the effect. It can be entered in minutes and seconds from the keypad. These timing values are applied to the entry and exit modes.

Grouping

Grouping is used only in relative and absolute effects. This determines how channels currently running the effect will be grouped throughout the pattern. To change this press **{Grouping}** and then enter the number of lights you want grouped together.

Grouping defaults to {Spread}. This means that every light the effect is applied to will act as an individual element, moving through the effect sequentially based on the channel order, cycle time, and trail times. You can enter any number you require. A grouping of 2 means that every other light in the selection list when the effect is applied will move together through the effect. Grouping of three means every third light, and so on.

Your options are 1-29 or {Spread} which will distribute each channel in the effect evenly and treat it as a separate group.

- ***{Grouping} [2]*** *- every other channel (in a range of channels) will be grouped when running the effect.*

When an effect is applied to a group in live, that group is distributed by order, using this grouping function. If a group list is created and an effect applied, each group is considered an individual element within the effect.

Trail

Trail is applicable to relative and absolute effects. Trail determines how channels are to follow each other through the effect; it is a percentage of the cycle time. Trail can be any value from 0-100%, even, or solo. The default is even. For example:

- {Even} - the groups will be distributed evenly throughout the pattern. This is calculated by dividing the cycle time of the effect by the number of groups of channels.
- {10%}-{90%} - when the first group is 10% through the effect, the second group will start the effect, and so on through the remaining groups. Therefore, the groups will trail n% behind each other, as a percentage of the cycle time.
- {Solo} - the first group will execute the entire pattern. When done, the second group will execute the entire pattern, and so on.

Using encoders with the effect editor

When any effect is specified in the command line, the encoder LCD automatically repaints to display the following properties:

- Cycle Time (Default is 5 seconds for relative effects)
- Scale
- Shape (Vertical or Horizontal as defined by the {Mode} button)
- Axis

At any time, you may use the encoders to adjust these properties within the effects editor for the specified effect.

Effect Status Display

To view the effects currently running, you may press **[Displays]>{Effect Status}** to reveal the effect status display in the CIA.

This display shows you any currently running effects and gives you the ability to edit the effect while running. When an effect is selected, the encoders and encoder screen change to allow you to manipulate the effect according to rate, size, horizontal form, vertical form, and axis.

For Example:

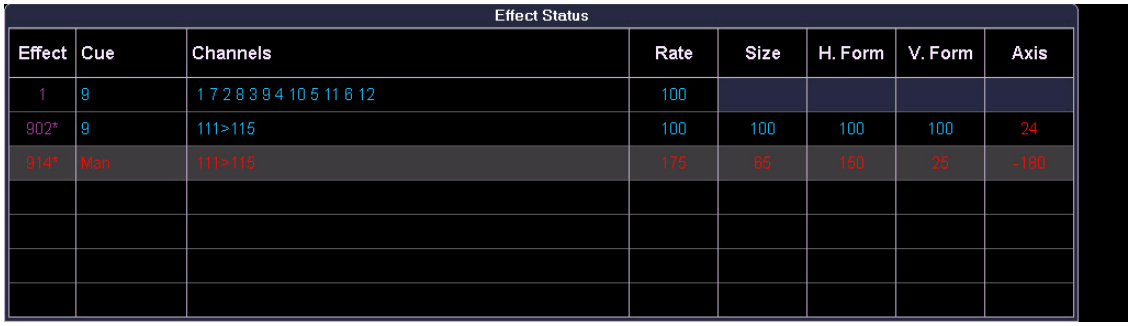
To edit an effect, select the effect using the command line.

- ***[Effect] [9] [0] [2] [Enter]***

The encoder screen repaints so that the encoders now control the five attributes in the columns of the effect status display:

- Rate - modifies cycle time. Default is 100% and can be modified from 0%-2000%.
- Size - modifies scale. Default is 100% and can be modified from 0%-2000%.
- Shape (Vertical or Horizontal as defined by the {Mode} button) - default is 100% and can be modified from 0%-2000%.
- Axis - default is 0° and can be modified by +/- 180°.

Use the encoders or softkeys to adjust the effects while watching the effect on stage.



The effect itself can be accessed for editing from this display by pressing {Edit}. Any changes made directly in the live effect editor are made to the effect itself and must be stored. Cue level overrides also must be stored or updated to the required cue, but do not impact the basic effect itself.

Step Effects

In step effects, each step contains an on-state and an off-state. The on-state is the action the channels in the step should take when the step is active. The off-state is the action the channels in the step should take when the step is not active. Step effects are a quick and easy way to build simple chases.

When building step effects, channels must be defined for each step. This is different from absolute and relative effects.

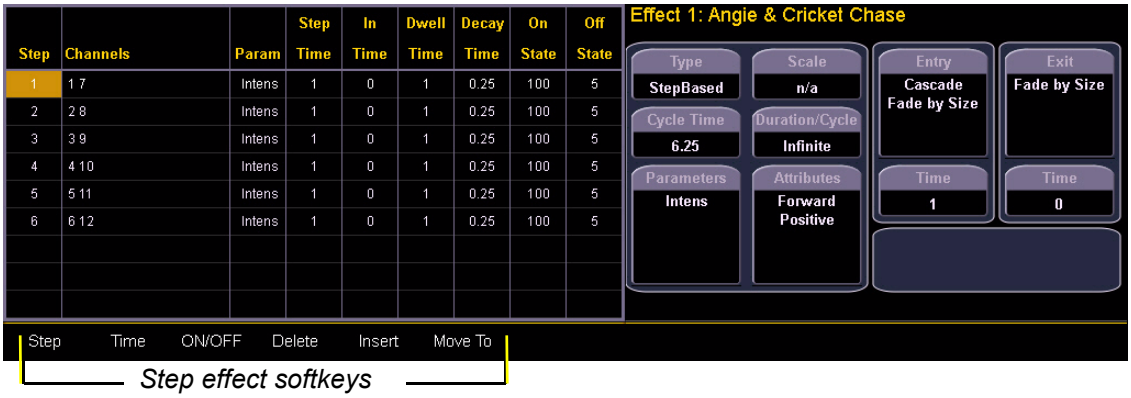
Once complete, you may play back the effect on all channels embedded in it by pressing **[Group] [Effect] [x] [Enter]**. Or you may specify only certain channels to play back from the embedded channel list.

A step effect is displayed in a chart with the following columns:

- **Step** - indicates the step numbers.
- **Channels** - displays the channel(s) in the step.
- **Param** - displays the parameter (if other than intensity) controlled by the step.
- **Step Time** - time from triggering the associated step to triggering the next step.
- **In Time** - the length of time for the channels to fade to the “on-state”.
- **Dwell Time** - the length of time the step remains in an “on-state”.
- **Decay Time** - the length of time it takes for the channels to fade to the “off-state”.
- **On State** - the parameter level (in %), or referenced data to be used for the on-state.
- **Off State** - the parameter level (in %) or referenced data to be used for the steps off-state. If you want the “off-state” to be the background state from playback, select the column and press [At] [Enter].

All times are entered from the keypad in minutes and seconds, tenths and hundredths.

Here is an example of a step effect when viewed in the CIA:



Step effect softkeys

Program a step effect

Below is the process used to program the effect illustrated in the image above.

For Example:

To open the effects list press:

- ***[Effect] [Effect]***

Establish the number of the effect by pressing:

- ***<Effect> [1] [Enter]***

The CIA will repaint with unpopulated fields for the new effect. Assign the effect as “step” by pressing:

- ***<Type> {Step-based}***

The effect will appear in the list and the CIA will repaint with the default entries for the effect and a step chart for the effect. Define the number of steps by pressing:

- ***{Step} [1] [Thru] [6]***

The steps will populate the chart and will remain selected. To make identical changes to all steps at once, you may now use the page arrow keys to navigate the chart. To make changes to only a single step, specify only one step in the command line, default values are drawn from the previous step.

After paging to the “Channels” column, specify the channels for the effect.

- ***[1] [thru] [1] [2] [Enter]***

Channels 1-12 will be broken up and distributed through the steps in the chart. Choose the parameter you would like in the effect by pressing:

- ***{Parameters} <Intensity>*** *(Intensity is assumed unless another parameter is specified)*

All steps are now intensity based. Use the page arrows to access the “Step time” column. Enter the desired step time:

- ***[1]***

Page arrow to the Dwell Time (In time is left at 0) column and enter a dwell time:

- ***[1]***

Page arrow to the Decay Time column and enter a decay time:

- ***[.] [2] [5]***

Page arrow to the On State column and enter the on state percentage:

- ***[1] [0] [0]***

Page arrow to the Off State column, or use the softkeys to go to the desired field, and enter the off state percentage:

- ***[5]***

Adjust any of the effect details on the right side of the CIA by pressing the appropriate detail button and making changes (see *Effects Editor, page 205*).

Note: *The cycle time is an aggregate of all of the timing in the effect and indicates how long it will take to make one full pass through the effect. If the cycle time is modified by the keypad or the encoder, it proportionally adjusts all of the timing within the effect.*

Delete a step

To delete a step from a step-based effect, specify the effect in the command line and press delete:

- **[Effect] [1] {Step} [4] [Delete] [Enter] [Enter]**
- **[Effect] [1] {Step} [4] [Thru] [8] [Delete] [Enter] [Enter]**

Insert a step

To insert a step anywhere in the effect, specify the step you wish the new step to be inserted before.

- **[Effect] [1] {Step} [4] {Insert} [Enter]** - Inserts a new step before step 4. If step four does not exist, it also creates the steps necessary to have “step 4” and then places a step ahead of it as well.

Inserted steps result in all succeeding steps to be bumped one place lower in the effect. In the above example, by inserting before step 4, step 4 would become step 5, step 5 would become 6 and so on. The inserted step would become the new step 4.

Absolute Effects

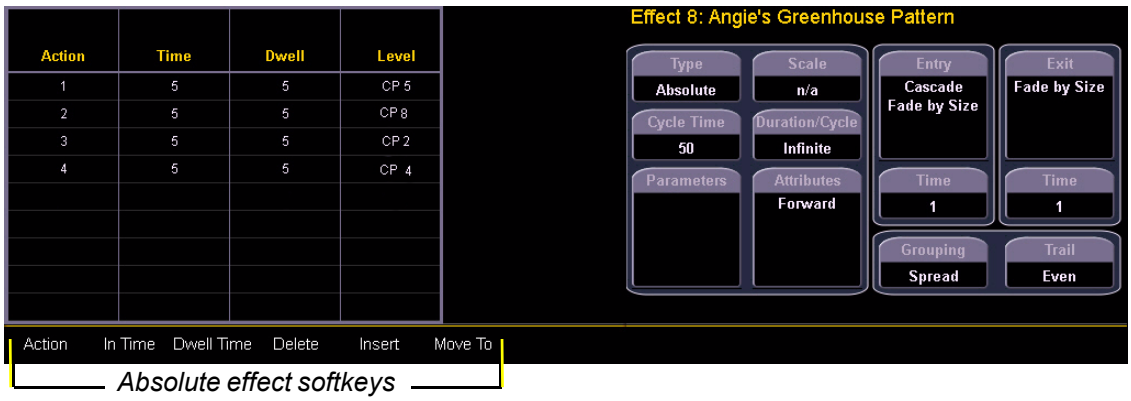
Absolute effects are a listing of sequential actions that channels are to take. They differ from step effects in that there is no on/off state, rather they define progressive behavior from one action, to the next, to the next, and so on. The best example of this is that palettes and presets can be used as actions in absolute effects.

Absolute effects differ from relative effects (which are also progressive) in that you are specifying exactly what actions you want the lights to take, rather than mathematical offsets from the current state (relative effects).

Absolute effects also do not contain an embedded channel list. Therefore, the effect must be applied to channels in order to be played back.

Absolute effects are displayed in a chart with the following columns:

- Action - displays the action number.
- Time - the time for the action to fade in.
- Dwell - the duration of the action before moving to the next action.
- Level - indicates either the level of the parameter specified in the effect, or the referenced value for the channel(s) to perform (Palette or preset as defined in the command line).



Absolute effect softkeys

In the above image, actions 1-4 indicate referenced values in the “Level” column (palettes or presets), though these values can be absolute data as well.

Program an absolute effect

Below is the process used to program the effect illustrated in the image above.

For Example:

To open the effects list press:

- ***[Effect] [Effect]***

Establish the number of the effect by pressing:

- ***[Effect] [8] [Enter]***

The CIA will repaint with unpopulated fields for the new effect. Assign the effect as absolute by pressing:

- ***<Type> {Absolute}***

The effect will appear in the list and the CIA will repaint with the default entries for the effect and an action chart for the effect. Define the first action by pressing:

- ***{Action} [1] [Enter]***

The step will populate the chart and will remain selected. You can also create a range of actions at once, using the [Thru] button, if desired. Use the page keys to navigate to the different columns

After arrowing to the “Time” column (or using the softkeys), specify the fade in time for the actions.

- ***[5] [Enter]***

Page arrow to the Dwell column and enter a dwell time:

- ***[5] [Enter]***

Page arrow to the Level column and enter the desired referenced target:

- ***[Color Palette] [5]***

Page arrow down and a new action will be created. All fields default to the values in the previous action. Page to the next action in the Level column and enter the referenced target:

- ***{Color Palette 8}***

Page arrow down to the next action in the Level column and enter the referenced target:

- ***[Color Palette] [2]***

Page arrow down to the next action in the Level column and enter the referenced target:

- ***{Color Palette 4}***

Adjust any of the effect details on the right side of the CIA by pressing the appropriate detail button and making changes (see *Effects Editor, page 205*).

Relative Effects

A relative effect is an offset from the current state of a channel parameter. There are three different types of relative effects: focus, color, and linear. Each of the these effect types have a graphic editor designed specifically for the parameters involved.

Relative effects have many of the same properties and attributes as step-based and absolute effects.

Ion is preprogrammed with 16 relative effects which represent some of the most commonly used patterns and parameters. These are automatically visible in the effects list and can be manipulated using the encoders to conform to your needs. You may also custom build relative effects.

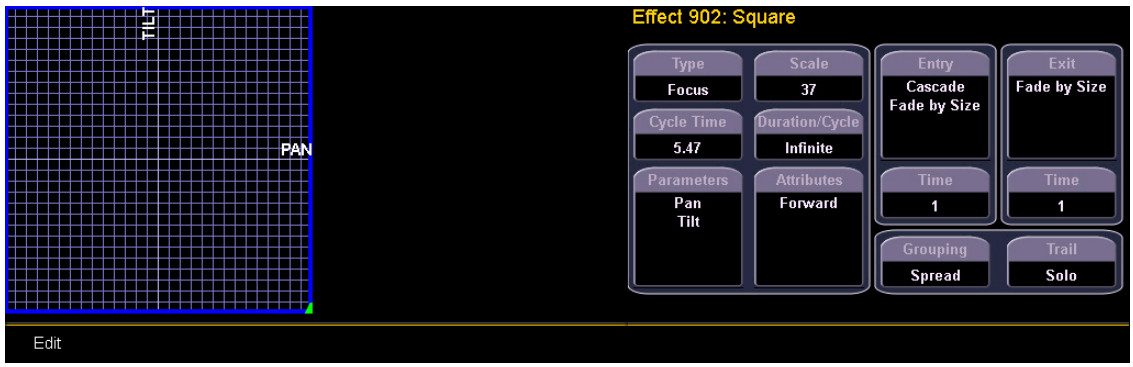
Note: *As you learn to use the effects editor with relative effects, it is recommended that you experiment with the preprogrammed effects until you understand the fundamentals and how effects can be altered.*

Focus effects

Focus effects are designed to impact a channel's pan and tilt parameters. These are represented in the horizontal and vertical axes of the graph in the effects editor. They can be created from live or blind and the properties can be set in the effects editor as any other effect (see *Effects Editor, page 205*).

New focus effects default to a circle. You can clear this and draw your own shape by pressing **{Edit}>{Clear}** and drawing on the graph with your finger or the mouse. Press **{Apply}** when you are done. Canned focus effects can be modified in the same manner. The green arrow indicates default direction of motion, which can be modified in attributes.

Focus Effect

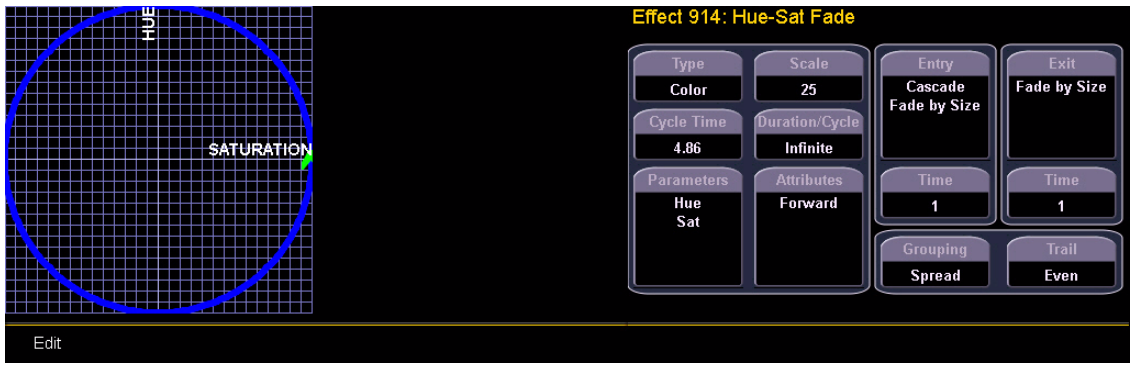


Color effects

Color effects impact only color parameters. Hue and saturation offsets can be used which are represented in the horizontal and vertical axes of the graph in the effects editor. The {Parameters} key within a color effect displays the various color mechanisms used in any patched channels.

New color effects default to a circle. You can clear this and draw your own shape by pressing **{Edit}>{Clear}** and drawing on the graph with your finger or the mouse. Press **{Apply}** when you are done. Canned color effects can be modified in the same manner. The green arrow indicates default direction of color shift, which can be modified in attributes.

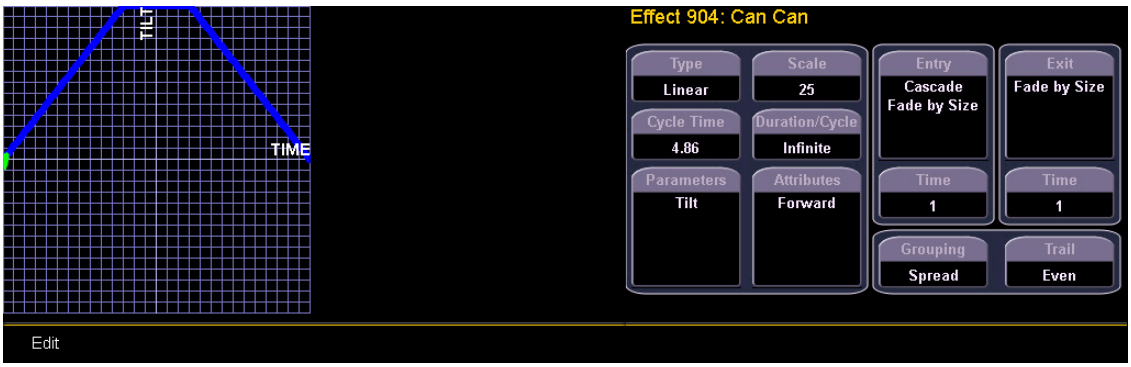
Color Effect



Linear effects

A linear effect does not have to be parameter specific. Rather it can simply be a reference to a linear diagram which can be applied to any parameter. You can redraw the linear diagram for an existing linear effect by pressing **{Edit}>{Clear}** and then tracing the diagram on the graph with the mouse or your finger. Press **{Apply}** when you are done.

Linear Effect



Define a pattern shape

Shapes can be defined for any relative effect (focus, color, or linear).

To define a shape, press the **{Edit}** softkey beneath the pattern editor. The softkeys will change to **{Apply}**, **{Restore}**, **{Clear}**.

- Press **{Clear}** to clear the pattern.
- Draw a new pattern using your finger (or the mouse). If you want to return to the original pattern, press **{Restore}** *before pressing apply.*
- When you have the proper pattern drawn, press **{Apply}**. The pattern will be applied to the effect.

Note: *If you delete a preprogrammed effect (for example, after making changes to it) the effect will return to its default value. Preprogrammed effects (901-916) cannot be deleted.*

You can also copy effects to another effect location and modify them from there. This will leave the original effect untouched.

- ***[Effect] [904] [Copy To] [8] [Enter]***

Program a new relative effect

To open the effects list press:

- ***[Effect] [Effect]***

Establish the number of the effect by pressing:

- ***[Effect] [4] {Type} {Linear/Focus/Color} [Enter]***

The effect will appear in the effect list and the CIA will repaint with the effect details visible. Manipulate the effect using the encoders, effect graph, or property fields so that the effect meets your needs (see *Effects Editor, page 205* for details on effect properties and encoders).

Apply an Existing Effect

Once an effect has been created, it will appear in the effects list. To apply an existing effect, press:

- **[**Select Channels**] [Effect] [**x**] [Enter]**

  or using the direct selects

- **[**Select Channels**] {Effect** x**}**

The selected channels will begin their changes as programmed in the effect.

Editing Effects Live

To edit an effect while it is running, press:

- **[Displays] {Effect Status}**

The effect status display will open in the CIA and any currently running effects will be visible in the display. Select the effect you want to edit live by pressing:

- **[Effect] [**x**] [Enter]**

Use the encoders to adjust the attributes as described in *Effect Status Display, page 209*. Adjustments are cue overrides and don't impact the core effect.

To edit other properties of the effect in live, press {Edit} and the effects editor will open (See *Effects Editor, page 205*). Changes made in the editor will impact the effect itself and all instances in which the effect is used.

Stop an effect

Pressing **[Stop Effect] [Enter]** will stop all running effects.

To stop a specific effect, press: **[Stop Effect] [**x**] [Enter].**

You may also stop effects on specific channels by **[**selecting channels**] [Stop Effect] [Enter]**.

You may also remove an effect instruction by **[**selecting channels**] [Effect] [At] [Enter]**. This command will work in live or blind

Chapter 19

Using Park

This chapter describes using park functions from both the live and park display.

This chapter contains the following sections:

- ***Park Display*** 220
- ***Parked Values in Live*** 221
- ***Scaled Parked Values in Live*** 222
- ***Park Values from the Park Display*** 223

Using Park

The park instruction allows you to set a channel or parameter to a specific value and have it remain at that level on stage (live mode), prohibiting manual control override, cue or submaster playback modification. Park may also be used to place a scaling instruction on the intensity output of a channel.

Note: *A parked channel intensity is not impacted by grand master or blackout operations.*

Parked values are withheld from all record targets, but you can manually set levels for parked channels and parameters and store those values into record targets. Keep in mind that the values set and stored in live do not actually output to the system if the parameter is parked.

When channels or parameters are parked, the LED on the [Park] button illuminates and the live display will indicate “Parked Channels” in the top left corner. In addition, any parked channel or parameter will be indicated with a white channel number. When the parked channel or parameter is unparked, it reverts to the level the console is currently providing, or its default value if there is no current instruction.

Park instructions are not subject to partitioned control. Any programmer or operator may park and unpark channels or parameters as needed. Parked parameters set by radio focus remotes (RFR) will automatically unpark when the associated device goes offline.

Channels, parameters and outputs can be parked and unparked from live and from the park display.

Park Display

You can access the park display by pressing **[Park] [Park]** or **[Blind] & [Park]**. The park display shows all parked channels and parameter values on the top half of the screen and all parked addresses (dimmers) on the bottom half of the screen. Parked channels displayed on the top of the screen can be displayed in the summary, table, and packed table views seen in the live/blind display by using the [Format] key.

When a channel intensity is parked, the parked value will be indicated in white text. When a channel has a non-intensity parameter that is parked, that parameter will also be indicated with white text. The display also provides detail of which user parked the channel or parameter (when multiple users are on the system).

When an address is parked, it will appear in the bottom half of the park display. The address, parked value, affected channels and parameters are indicated.

Parked Values in Live

Channels and parameters may be parked and unparked from the live display. Following are some examples:

To park a channel, parameter, or group from live:

- **[2] [At] [5] [0] [Park] [Enter]** - parks channel 2 intensity at 50%
- **[2] [Intensity] [Park] [Enter]** - parks the intensity of channel 2 at its current value
- **[2] [Park] [Enter]** - parks all parameters of channel 2 at their current settings

Note: *If a channel list is constructed in which some channels are parked and some are unparked, [Park] [Enter] will unpark them all.*

- **[2] [At] [Park] [Enter]** - if channel 2 is unparked, this command parks intensity at the current value. If the intensity for channel 2 is parked, this command unparks intensity.
- **[Group] [2] [At] [Park] [Park] [Enter]** - pressing [Park] twice is a toggle state and allows you to park a complete channel list that currently has some channel intensities parked and some unparked.
- **[2] [Color Palette] [8] [Park] [Enter]** - parks the color for channel 2 in color palette 8.
- **[2] [Color] [Park] [Enter]** - parks channel 2 color at its current value.
- **[Cue] [6] [Park] [Enter]** - parks all the channels stored in cue 6 at their levels provided in the cue.
- **[Park] [Enter]** - clears all parked channels and scaled park instructions (see *Scaled Parked Values in Live, page 222*). When a channel is unparked, it reverts to the level the console is currently providing, or its default value if there is no current instruction.

Scaled Parked Values in Live

A scaled parked value allows the intensity output (only) to be modified proportionally in live. Scaled park values are ignored when storing a record target. The setting on the display indicates what should be stored, not the actual scaled value. An example of how to set a scaled parked value in live includes:

- **[3] [At] [/] [1] [2] [5] [Park] [Enter]** - sets a scaled value of 125% on channel 3 intensity. In other words, whenever channel 3 is active, it will be active 25% higher than its current setting.
- **[3] [At] [/] [8] [5] [Park] [Enter]** - sets a scaled value for channel 3. Whenever channel 3 is active, it will playback 15% lower than its current setting.

Remove the scaled parked value:

- **[3] [At] [/] [Park] [Enter]** - unparks a scaled intensity for channel 3.
- **[Park] [Enter]** - unparks all parked channels.

A channel can have both a scaled parked value and a parked intensity value. Keep in mind that the parked intensity has priority over (and overrides) scaled park values. A channel can have a parked value or a scaled park value, but not both.

Parked Addresses in Live

DMX addresses can be parked in Live. When in live, an {Address} softkey exists beneath the CIA and is accessible by using the [More SK] button.

Below are some examples of parking an address in live:

- **<More SK> {Address} [5] [At] [5] [0] [Park] [Enter]** - parks output 5 at 50% intensity.
- **<More SK> {Address} [5] [Park] [Enter]** - unparks output 5.
- **<More SK> {Address} [Park] [Enter]** - unparks all parked outputs.

Park Values from the Park Display

You can park and unpark channel parameters or addresses from the park display. Open the display by pressing **[Park] [Park]** or **[Blind] & [Park].** While in this display, it is assumed that you want to park channels or parameters, therefore the use of the [Park] key is not necessary when parking, but is required for unparking.

Following are examples for parking channel parameters from the park display:

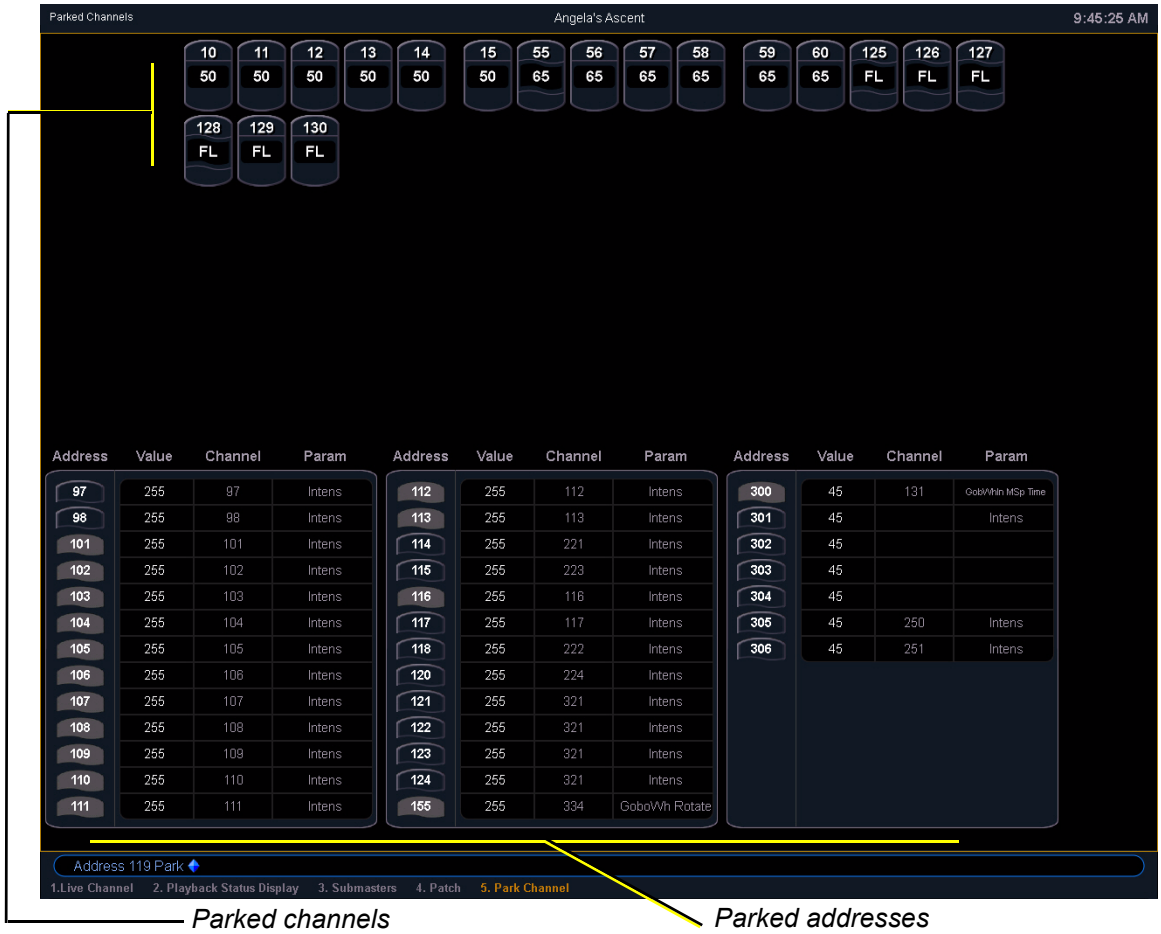
- **[3] [At] [4] [5] [Enter]** - parks channel 3 at 45%.
- **[3] [Color Palette] [4] [Enter]** - parks color for channel 3 at color palette 4.

Following are examples for clearing parked values while in the park display:

- **[Select Active] [Park] [Enter]** - clears all parked channel parameter values.
- **[**channel list**] [Park] [Enter]** - unparks channels in the list.
- **[**channel list**] [At] [Enter]** - unparks channels in the list.

Below are examples for parking addresses in the park display:

- **{Address} [5] [At] [5] [0] [Enter]** - parks address 5 at 50% intensity.
- **{Address} [5] [At] [Enter]** - unparks address 5.



Chapter 20

Storing and Using Submasters

The virtual faders can be assigned as submasters. This chapter explains how to assign and use submasters on your Ion console.

This chapter contains the following sections:

- ***About Submasters*** 226
- ***Loading Submasters*** 227
- ***Using Bump Button Timing With Submasters*** 229

About Submasters

Submasters can be used to store manual intensity data for channels. You can copy cues, presets, or intensity palettes to a submaster as well. Submasters can be accessed using the virtual faders (see *Virtual Faders, page 182*).

Faders can be configured as submasters in setup (see *Fader Configuration, page 82*).

When set as a submaster, the bottom button beneath the potentiometer acts as a bump button. One click of the bump will bring the submaster level to full (unless the submaster has timing data). The button above this acts as a solo button. When clicked, solo will immediately force all intensities *not* controlled by the submaster to drop to zero. This is a momentary button; when it is released, the stage state is restored.

When a submaster bump LED is blinking, it means that the submaster must be homed due to either changes to its content or to its mode. In either case, reset the submaster by dropping it to zero and the moving it back to the desired position.

It is possible to program upfade, dwell, and downfade times in association with the submaster bumps.

In the window above any programmed submaster, you will see the following:

- Submaster number
- Submaster label (if any)
- Independent flag (if any)
- A fader icon representing the current setting

Additive vs. Inhibitive

You may define your submaster as additive (contributes to the live output) or inhibitive (removes from live output). Ion defaults to submasters being additive.

To toggle a submaster between additive or inhibitive:

- ***[Sub] [7] {Sub Type} [Enter]***

Additive submasters are indicated by a green LED and a green fader icon in the fader window. Inhibitive submasters display these indicators in red. Channels mastered by an inhibitive submaster are indicated with an “I” next to the intensity value in the channel display in live.

Independent

You can also set a submaster to “independent”, allowing submaster values to remain unaffected by other submasters or playback fader instructions. They will, however, still be impacted by manual control, grand master, blackout, park instructions, or other faders and submasters on independent.

Inhibitive subs can not be set as independent.

To toggle a submaster between independent “on” or “off”:

- ***[Sub] [7] {Independent} [Enter]***

Loading Submasters

Submasters can be loaded with cues, presets, or intensity palettes. To load a submaster with these record targets, see the following examples:

- **[Cue] [5] [Sub] [4] [Enter]** - loads the intensity contents of cue 5 to submaster 5.
- **[Cue] [5] [Load]** - loads cue 5 to the submaster associated with the chosen load button.
- **[-] [5] [Cue] [5] [Sub] [6] [Enter]** - loads the contents of cue 5, minus channel 5, to submaster 6.
- **{Intensity Palette 5} & [Load]** - uses the soft selects to load the intensity palette to the chosen submaster.
- **[Cue] [1] [thru] [5] [Sub] [1] [thru] [4] [+] [7] -** sequentially loads cues 1 thru 5 to subs 1, 2, 3, 4 and 7.
- **[Cue] [1] [thru] [5] [Sub] [1] [thru] [Enter]** - sequentially loads cues 1 thru 5 to subs 1 thru 5.

Recording to a Submaster

You can also record current stage contents directly to a submaster. To do this, set levels in live as needed then record them to the submaster. See the following examples:

- **[Record] [Sub] [5] [Enter]** - records the intensities of the current stage state to sub 5.
- **[Record Only] [Sub] [5] [Enter]** - records the manual intensities of the current stage state to sub 5.
- **[Record Only] [Sub] [5] [Label] [xxxx] [Enter]** - as above, with a label.

You can also record selected channel data to submasters as well. See below:

- **[**Channel List**] [Record] [Sub] [5] [Enter]** - records the intensities in the channel list to sub 5.
- **[**Channel List**] [Record Only] [Sub] [5] [Enter]** - records the manual intensities in the channel list to sub 5.

Updating a Submaster

It is possible to make changes to a submaster in live mode. [Update] is used to store changes to a submaster.

- **[Update] [Sub] [5] [Enter]** - updates sub 5 to include the live intensity output.
- **[**Channel list**] [Update] [Sub] [5] [Enter]** - adds only the specified channels to submaster 5.

Labels can be changed without restoring the contents as well:

- **[Sub] [6] [Label] [xxxx] [Enter]**
- **[Sub] [6] [Label] [Enter]** - removes the label.

Clearing a Submaster

You can clear a submaster using the [Delete] key. When a submaster is deleted, its contributions to the live output are removed from the stage.

- **[Delete] [Sub] [5] [Enter] [Enter]** - deletes the contents of sub 5.

Configuring Submasters While Programming

You can convert a fader to a submaster without configuring it in setup. If any submaster number is on the command line, you can press [Load] for the fader and it will be loaded with that submaster if:

- the fader has no cue list loaded (and is assigned as a playback fader)

  -or-

- the fader has no submaster data recorded to it (and is already defined as a submaster).

Regardless of the fader configuration in setup, if the above conditions are met, the fader can be loaded with the submaster specified on the command line.

For Example:

Specify a sub on the command line.

- ***[Sub] [5] [Enter]***

Press the load button for an empty fader assigned as a playback.

- ***[Load]***

The sub will load to that fader.

To return that fader to its original configuration as a playback fader, you must reconfigure the fader in setup (see *Fader Configuration, page 82*).

Using Bump Button Timing With Submasters

Each submaster bump can have three different timing values: Upfade, Dwell, and Downfade (see below). The default timing is set so that the bump functions as an “on” flash key for additive submasters and an “off” flash key for inhibitive submasters.

The three timing values are:

- **Upfade time** - this is the time for the submaster to fade from its home position to its target position (0 to Full if additive, Full to 0 if inhibitive). The default time is 0.
- **Dwell time** - this is the time the submaster look will hold before starting the downfade. This can be set to a specified time, or to “Hold” or “Manual”. The default is “Manual”.
- **Downfade time** - this is the time for the submaster to fade from its target position to its home position. The default time is 0.

At any time, the potentiometer can be used to manually override fade progression or a submaster triggered with time.

To add bump button timing live:

- **[Sub] [8] [Time] [3] [Time] [4] [Time] [3] [Enter]** - adds a 3 second upfade, 4 second dwell and 3 second downfade to submaster 8.
- **[Sub] [4] [Time] [Time] {Manual} [Time] [3] [Enter]** - adds a manual dwell time and a 3 second downfade time to submaster 4. When the bump is pressed and held, it will flash on and stay on until the button is released. At which time it will begin the downfade.
- **[Sub] [4] [Time] [3] [Time] {Hold} [Enter]** - adds a 3 second upfade time, and a ‘hold’ dwell time. When the bump is pressed, the upfade starts. Once at the target value it will remain there until the button is pressed again. The downfade will “bump” to zero.
- **[Sub] [4] [Time] [Enter]** - resets all time for submaster 4 to default (Up = 0, Dwell = Manual, Down = 0).

Controlling subfades manually

It is possible to take control of submasters even if they have recorded time. To capture the fade you must push the potentiometer past the current fade level. Once this is done, control is transferred to the potentiometer for full manual control.

You may then use the potentiometer to increase or decrease the submaster level as needed.

Submaster List

You can access the submaster list by pressing **[Sub] [Sub]** or through the browser (**Record Target Lists>Submaster List>[Select]**). Either of these commands will open a new tab for the submaster list or bring focus to the list if it is already open on a tab.

The list view includes a list of all submasters indicating the label, type, timing data, independent status, bump, and solo status of each. You can navigate within the list by using the [Next] and [Last] buttons or by selecting the desired submaster from the command line.

When this tab is active, the softkeys will repaint to supply you with options to affect the submaster type, or if the submaster is set to independent. You can also move a submaster using [Move To]. For example:

- **[Sub] [1] {Sub Type} [Enter]** - toggles the submaster 1 between “additive” and “inhibitive”. This can be done in live as well.
- **[Sub] [2] {Independent} [Enter]** - toggles submaster 2’s independent setting on and off. Independent can only be activated on an additive submaster.
- **[Sub] [2] {Move To} [Sub 9] [Enter] [Enter]** - moves the contents, label, and timing data from submaster 2 and places it in submaster 9. Submaster 2 is removed.

You may copy the contents of a submaster by using the [Copy To] button.

Editing submasters from the list

If you want to actually edit the contents of the submaster, you can select the submaster and press **{Edit}**. This changes focus to the live/blind display and places you into the blind edit mode for the specified submaster. You may also press **[Blind]** and select the required submaster from the command line.

Any changes made in this screen are automatically stored. A [Record] or [Update] command is not required.

Chapter 21

Using About

[About] provides detailed information regarding selected elements. When opened, it appears in the CIA and remains open until closed or until another action forces it to close.

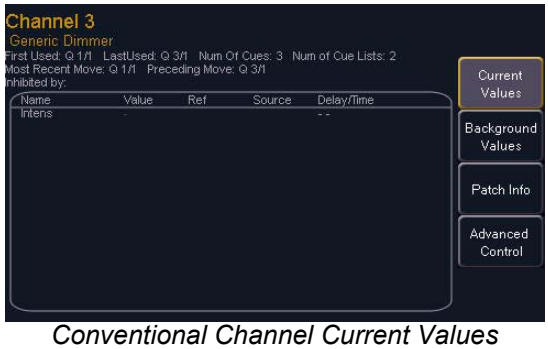
This chapter contains the following sections:

- ***[About]*** 232
- ***<About> [number] [Enter]*** 233
- ***<About> [Cue] [number] [Enter]*** 233
- ***<About> [I/F/C/B Palette] [number] [Enter]*** 234
- ***<About> [Preset] [number] [Enter]*** 234

About [About]

Pressing [About] puts the console in “about” mode, which allows you to examine “about” information indefinitely, simply by selecting the element you are interested in.

When in about mode, selecting a channel will reveal information about that channel. Below are examples of the “Current Values” view (see below) of information that is presented when selecting conventional or moving lights.


Channel 3
Generic Dimmer
First Used: Q 1/1 LastUsed: Q 3/1 Num Of Cues: 3 Num of Cue Lists: 2
Most Recent Move: Q 1/1 Preceding Move: Q 3/1
Inhibited by:
Name Value Ref Source Delay/Time
Intens
Current Values
Background Values
Patch Info
Advanced Control

Conventional Channel Current Values

Moving Light Channel Current Values

The buttons on the right side of the about screen alter the information that is displayed for the selected channel. The selected button is highlighted in gray. The buttons are:

- **{Current Values}** - this shows any current information that the channel is receiving and following.
- **{Background Values}** - this displays any information that is being sent to the channel, but not adhered to since another source has ownership of the channel.
- **{Patch}** - this displays patch information about the channel.
- **{Advanced Control}** - this displays any parameters associated with the channel. If the channel is a conventional (intensity-only) fixture, no parameters will be displayed. If it is a moving light, this key will access lamp controls.

[About]

When [About] is pressed, the CIA presents the following information:

- Software version
- Copyright notifications

<About> [number] [Enter]

This displays information about the specified channel. Pressing [About] is not required if the about display in the CIA is already open. You can select the information you wish to view from the four buttons located on the right side of the CIA. The buttons are:

{Current Value} displays information that indicates:

- Cue the channel was first used in
- Cue the channel was last used in
- Number of cue lists the channel is used in
- When was the most recent move (of any parameter)
- When was the preceding move (of any parameter)
- What the channel is inhibited by (if anything)
- A list of parameters available on the channel and information about them.

{Background Value} displays the same information, but from other sources that do not currently have control of the channel.

{Patch} displays the following information:

- The channel's address range
- The proportional patch level
- Curve (if any)
- Swap status
- Invert pan/tilt status
- Any keywords associated with the channel

{Advanced Control} displays all parameters associated with the channel and access lamp controls (if it is a moving light).

<About> [Cue] [number] [Enter]

The following information will be displayed:

- if the cue is active and what fader it is playing on
- timing data for the cue (including discrete timing)
- any effects running
- number of move instructions in the cue
- what channels move in the cue

<About> [I/F/C/B Palette] [number] [Enter]

The following information will be displayed:

- the number of cues the palette is used in
- the number of presets the palette is used in
- the number of move instructions the palette is used in
- the first cue the palette is used in
- the last cue the palette is used in
- the number of cue lists that use the palette

<About> [Preset] [number] [Enter]

The following information will be displayed:

- the number of move instructions the preset is used in
- the first cue the preset is used in
- the last cue the preset is used in
- the number of cue lists that use the preset

Chapter 22

Storing and Using Curves

A curve is a relationship between the time during a fade and the output level of a cue, cue part or dimmer at each point of time during that fade. By using a non-linear curve, you can create of variety of effects, accommodate variations and deficiencies in your lighting equipment, alter the transition ramp and protect equipment from stress.

This chapter contains the following sections:

- ***About Curves*** 236
- ***Creating a Curve*** 237
- ***Editing Curves*** 238
- ***Applying a Curve*** 239
- ***Delete a Curve*** 239

About Curves

You may apply curves to dimmers in patch. Curves may also be applied to cues and to cue parts. When applied to a cue, the curve impacts only the intensity moves in that cue. When applied to a cue part, the curve impacts all parameter moves stored in that cue part.

When applied in patch, the intensity transition will follow the ramp defined by the curve during its fade. This value is determined by referencing the output value of the curve at that percentage and outputting the curved level rather than the percent level. Up to 100 points of delineation can be established in a curve, each with its own intensity value if desired.

When applied to a cue, the “percent completion” of the cue is determined by applying the curve’s output level as the percent completion for all fade calculations. For single-part cues, the calculation applies only to intensity. For multipart cues, however, the curve applies to all parameters in the part.

Ion provides nine pre-programmed, commonly used curves. They can be edited or copied to a new curve location. When a pre-established curve is deleted, it will return to its original state.

The curve editor can be accessed by pressing **[Displays] {Curve}** or from the browser, **Browser>Record Target Lists>Curves**. When selected, the curves list will open as a separate tab and the CIA will show the graphical output of the first curve in the list.

You can scroll through the list using the [Next] and [Last] keys, or you can specify a curve in the command line.

- **{Curve} [9] [0] [4] [Enter]** - selects curve 904 from the list and displays its shape in the CIA.

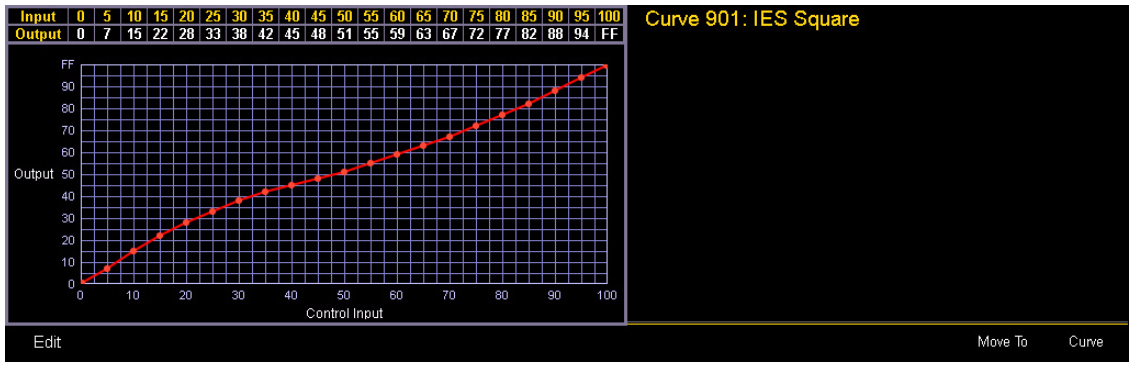
Creating and Editing Curves

Creating a Curve

When you have opened the curves display (see *About Curves, page 236*), you can select a curve or create a new curve by pressing:

- **{Curve}** [x] **[Enter]**

If the curve is already stored, the contents are displayed in the CIA. If this is a new curve, a linear curve is displayed.



Pre-established Curve

New Default (linear) Curve

Editing Curves

Using the Keypad

Once selected and displayed in the CIA, you can edit a curve from the keypad. Points are established in increments of five. You can add more points from the keypad.

- **[3] [At] [1] [Enter]** - adds control input point “3” and sets its curve level at 10%.
- **[7] [7] [At] [Full] [Enter]** - adds control input point “77” and sets its curve level at full.

You can specify points and adjust their levels in the command line or you may use the keys below to alter the curve:

- [Page ▶] - selects the next fade completion point.
- [Page ◀] - selects the previous fade completion point.
- [Level Wheel] - adjusts the output level of the selected point.
- [Page ▲] - raises the selected point’s output by 1%.
- [Page ▼] - lowers the selected point’s output by 1%.
- [Full] - sets the selected point’s output to full.
- [Out] - sets the selected point’s output to zero.
- [+%] - raises the selected point by the amount for [+%] established in setup.
- [-%] - lowers the selected point by the amount for [-%] established in setup.

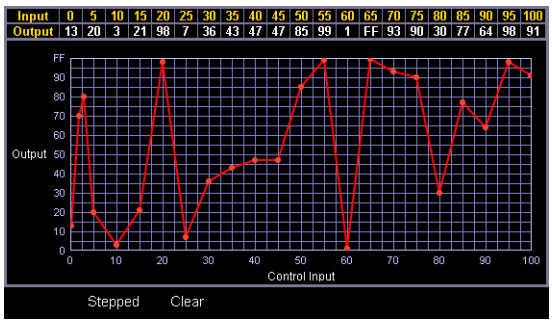
Using the curve display

Once a curve is displayed in the CIA, you can press **{Edit}** to edit the curve in the editor display.

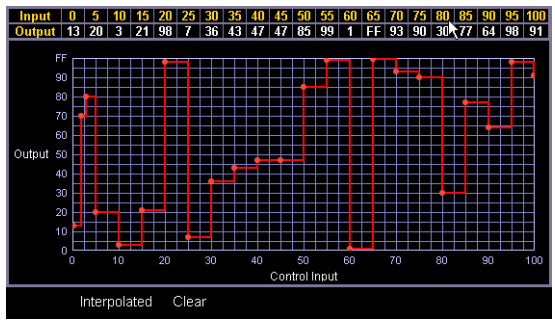
In the curve editor you can trace the desired shape of the curve using the mouse on the screen. As you progress through drawing the curve, intensity values will be added for existing points on the curve. If you add points to the curve (from the keypad) those points will be adjusted as well.

You can also toggle between an “interpolated” or “stepped” curve shape. Ion defaults to “interpolated”. To switch to “stepped”, press the {Stepped} softkey. Once pressed, this softkey changes to {Interpolated}, which allows you to switch back.

Below are two examples of the same curve. The first is interpolated and the second is stepped.



Interpolated Curve



Stepped Curve

Clearing the curve

At any time, you can clear a curve from the curve editor display by pressing the {Clear} softkey. This will return the curve to its original linear shape or to its default shape if it is a pre-established curve.

Applying a Curve

To Channels In Patch

Curves can be applied to any intensity parameter in patch. Once added, the curve number appears in the channel's "Curve" column of the patch display.

- **[Displays] {Patch} {Attributes} [1] {Curve} [9] [0] [1] [Enter]** - applies curve 901 to channel 1 intensity.
- **[Displays] {Patch} {Attributes} [2] [Thru] [8] {Curve} [2] [Enter] -** applies curve 2 to intensity for channels 2 thru 8.
- **[Displays] {Patch} {Attributes} [1] {Curve} [At] [Enter] -** removes the curve from channel 1.

To Cues

Curves can also be applied to cues or cue parts in Live/Blind. This affects the percent completion of the cue or part by applying the curve's output level as the percent completion for all fade calculations. Once added to a cue, the curve number appears in the cue's "Curve" column of the cue list in the playback status display.

- **[Cue] [5] <More SK> {Curve} [4] [Enter]** - applies curve 4 to cue 5.
- **[Cue] [4] [/] [6] [Thru] [9] <More SK> {Curve} [9] [0] [6] [Enter]** - applies curve 906 to cues 4/6 through 4/9.
- **[Cue] [5] <More SK> {Curve} [At] [Enter]** - removes any curve from cue 5.
- **[Cue] [8] [Part] [3] {Curve} [6] [Enter]** - applies curve 6 to part 3 of cue 8.

Delete a Curve

While in the curve display, you can delete a curve in the following ways:

- **[Delete] {Curve} [3] [Enter] [Enter]** - deletes curve 3 from the list.
- **[Delete] {Curve} [9] [0] [1] [Enter] [Enter]** - since curve 901 is a pre-established curve, this command will return curve 901 to its default state, thereby removing any edits to it.
- **[Delete] [Enter]** - deletes the currently selected curve.

Chapter 23

Storing and Using Macros

Ion provides you with the ability to record macros, which allow you to compose a series of programming actions and be able to execute them later by recalling the macro.

This chapter contains the following sections:

- ***Store a Macro from Live*** 242
- ***Macro Editor Display*** 244
- ***Play a Macro*** 248
- ***Delete a Macro*** 248

About Macros

Macros are comprised of any series of button presses (both hard and softkeys), screen commands and events. Ion provides you with the macro feature to simplify complex or repetitive console programming and operating tasks that you perform often.

When you record the series of button presses to a new macro, you can later play it back by simply pressing the macro direct select button, running it from a linked cue, accessing it from a connected show control system, remotely triggering the macro, or running it from another recorded macro.

You may create up to 1,000 macros either from live, using the macro [Learn] mode to record a sequence of keystrokes as you perform the operation, or you can create a macro from within the macro editor display, entering and editing keystrokes into the macro content editor without actually executing the instructions.

The macro editor display contains a listing of all recorded macros including labels and the contents of the macros stored. All macro editing is accomplished from the macro editor display.

Store a Macro from Live

The most effective way to store a macro is from live mode using the macro [Learn] mode to record a sequence of button presses as you enter them. You can include any button press on the console (hard key or soft key), except [Macro], the arrow keys, [Escape], [Select] and [Learn].

Using the [Learn] key

Pressing the **[Learn]** key while in live mode places the console in macro learn mode. The **[Learn]** key flashes and the CIA displays “Learning” above the command line. Assign a number identifier (from 1 to 1000) to the Macro using the control keypad and press **[Enter].** The CIA flashes “Learning Macro ####” above the command line. This indicates that the console is ready to record the macro.

Note: *It is helpful if you plan your macro content in advance of the macro record process. While in learn mode, each button press is recorded as content, even the [Clear] button if you have mistaken a keystroke. There is no way to fix a content error in live mode, but you can rerecord the macro as needed or you can edit the recorded macro in the macro editor, removing any unneeded commands.* *See “Edit an Existing Macro” on page 247.*

Begin writing the sequence of button presses and events for the macro record. When you have finished with the series of events and button presses, press the **[Learn]** key again to exit macro learn mode.

Examples of a macro record function include:

- **[Learn] [1] [Enter] [Go To Cue] [Out] [Time] [0] [Enter] [Learn]** - records macro 1 with the go to cue out command.
- **[Learn] [5] [Enter] [1] [Full] {Chan Check} [Enter] [Learn]** - records macro 5 with channel 1 at full in channel check mode. To check the next channel in the list, press **[Next]**.
- **[Learn] [4] [Enter] [-] [Sub] [Record] [Learn] -** records macro 4 with instructions to record a target excluding all submaster data.
- **[Learn] [2] [Enter] [-] [Group] [6] [Color] [Record] [Learn]** - records macro 2 with instructions to record a target excluding the color data from group 6.

You can also create a macro in live that bumps submasters across fader pages but first you must have channels assigned to the submasters.

For Example:

Write submasters 1 through 5 and 15 through 17, each with its own channel selections at 100%. Then press:

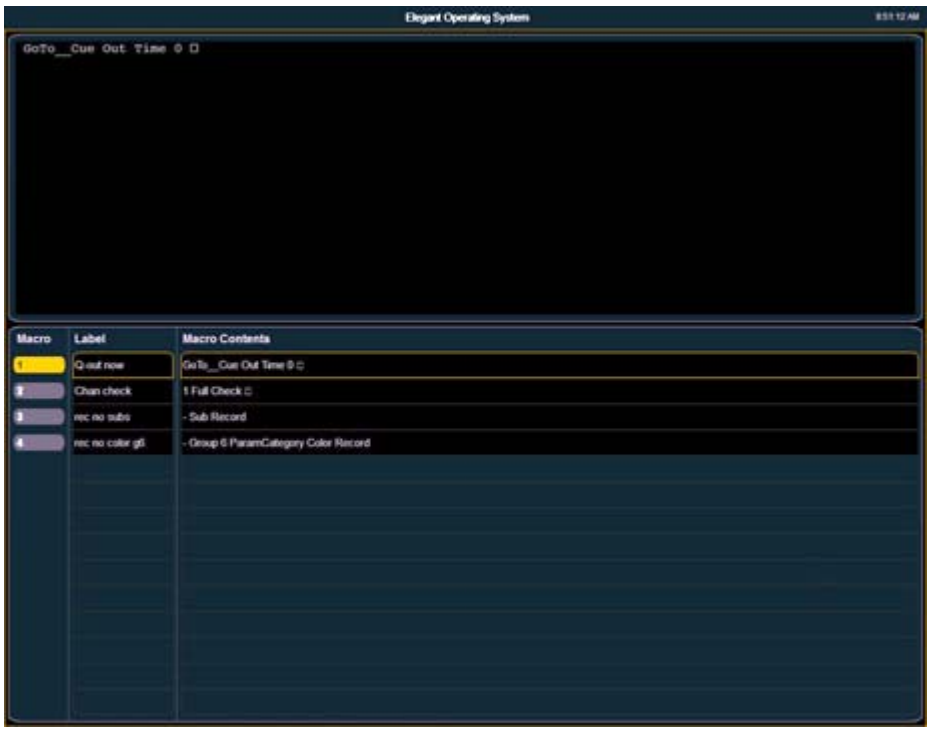
- ***[Learn] [1] [Enter] [Bump1] [Bump2] [Bump3] [Bump4] [Bump5]***
- ***[Fader Page]***
- ***[Bump15] [Bump16] [Bump17] [Learn]***

Once you have created the macro from Live in [Learn] mode, you can easily edit the sequence from the macro editor display. *See "Macro Editor Display" on page 244.*

Macro Editor Display

Macro editing is accomplished from the macro editor display. As an alternative to recording your macro in live, you may create it from this display instead. Open the macro editor display from the browser by navigating to **Record Target Lists > Macro Editor**, then press **[Select]**. The editor will display on an external monitor.

The display is divided horizontally, the top portion displays the macro contents in detail while the bottom portion lists all macros, including the label and contents.



While in the macro editor display, any numeric entry on the command line is assumed to be a macro number. If the macro number entered already exists and **[Enter]** is pressed, the macro list will page to the selected macro and the macro content detail section will display all of the contents of the selected macro. If the macro number entered does not exist in the list and **[Enter]** is pressed, an empty macro will be created with the specified macro number.

While in the macro editor display, the following functions may be performed using the control keypad and softkeys:

- **[Label]** - when a macro is selected and **[Label]** is pressed, the alphanumeric keypad will display on the CIA. Label the macro and press **[Enter]**.
  - **[1] [Label] <**name**> [Enter]** - labels macro 1
- **[Delete]** - when a macro is selected and **[Delete] [Enter]** is pressed, you will be prompted to confirm the deletion of the selected macro. To confirm press **[Enter]**, to abort press **[Clear]**.
  - **[1] [Delete] [Enter] [Enter]** - deletes macro 1 from the list.
- **[Copy To]** - when a macro is selected and **[Copy To]** is pressed, you will be prompted to enter the macro number that you want to copy the contents of the selected macro to. You will be prompted to confirm the copy process, press **[Enter]** to confirm or **[Clear]** to abort the copy to process.
  - **[1] [Copy To] [6] [Enter] [Enter]** - copies the entire contents of macro 1 to macro 6.
- **{Edit}** - when a macro is selected and **{Edit}** is pressed, you will have entered edit mode for the selected macro. Three notable changes to your macro editor display include:
  - A blinking cursor in the macro content detail portion (top) of the display.
  - ”Press [Select] to save or [Escape] to cancel changes” flashes above the command line.
  - The available softkeys change to {Loop Begin}, {Loop Num}, {Wait}, {Delete}, {Cancel} and {Done}.
- **{Move To}** - allows you to move and reorganize your macros anywhere in the macro list numerically.
  - For instance, if you have macros 1 through 5 in the list, and you want to move or change macro 1 to macro 6 so that your most commonly used macros are first in the list, you would press **[1] {Move To} [6] [Enter]**. This leaves only macros 2 through 6 in the list.

Create a New Macro from the Display

From the macro editor display, enter any unrecorded macro number from 1 to 1000 and press **[Enter]**. Your new macro number will display in the macro list in numerical order but will not have a label or any contents.

To store the macro contents, select the macro and press **{Edit}**. A cursor appears flashing in the macro content detail portion of the display, ready for you to add the macro content.

For Example:

Create macro 3. Write the instruction to set all active channels to 50%, then sneak them to their original levels over 10 seconds and last, link to macro 5.

- ***<Macro> [3] [Enter]***
- ***{Edit}***
- ***[Select Active] [At] [5] [Enter]***
- ***[Sneak] [Time] [1] [0] [Enter]***
- ***[Macro] [5] [Enter]***
- ***[Select]***

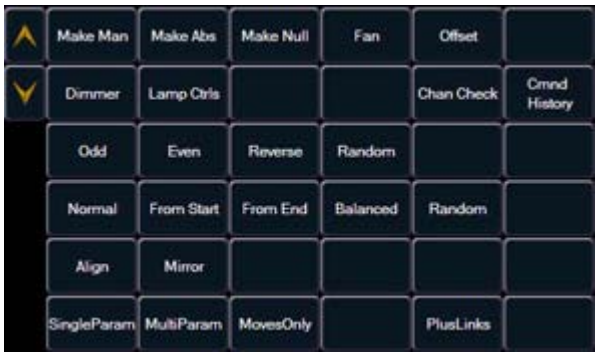
While in macro edit mode, all keys are entered as content except the macro editor softkeys, arrow keys, **[Escape]**, **[Select]** and **[Learn]** keys.

Edit an Existing Macro

When you have created a macro using macro learn mode from live or otherwise, you can edit the content of your macro by removing or adding commands and special macro softkey functions (such as wait, loop, and so on).

From the macro editor display, select an existing macro number and press **[Enter]**. The selected macro contents will display the detail section. Press **{Edit}** to make changes to the content.

When in edit mode, the browser changes to display all softkeys available for the system that would otherwise be difficult to find when recording a macro.



Next to the softkeys display are paging buttons to page through the available softkeys. When used, these paging buttons will not be stored as content in your macro.

In addition, a new set of macro editor softkeys are displayed while in edit mode including:

- **{Loop Begin}** - inserts a loop start command.
- **{Loop Num}** - inserts an end command for a loop with a limited number of iterations. An infinite loop is assigned when you use “0” for the iterations.
- **{Wait}** - inserts a pause.
- **{Delete}** - removes commands from the macro.
- **{Cancel}** - cancels edits made to the selected macro and returns you to the macro lis.t
- **{Done}** - exits macro edit mode. You may also use the [Learn] key to enter and exit edit mode.

In edit mode, the cursor in the macro content detail section of the display provides use of the arrow keys to navigate through the existing content list. Use of the arrow keys will not be stored to the macro content.

To add content, place the cursor in the section that you want to insert, then add the command. To delete a command, place the cursor ahead of the content to be deleted, then press the **{Delete}** softkey.

Press **[Select]** when you have completed all editing. Press **[Escape]** to abort.

Play a Macro

You can play a macro from the command line, from the direct selects, run it from a linked cue, or from another macro.

To play macro 5 from the command line press **[Macro] [5] [Enter]**. “Running Macro 5” displays above the command line in live while the macro is running.

To run macro 5 from the macro direct selects simply press **{Macro 5}**. “Running Macro 5” displays above the command line in live while the macro is running.

To run macro 5 from cue 1 press:

- **[Cue] [1] {Execute} [Macro] [5] [Enter]**

To run a macro from another macro, see the example under *Create a New Macro from the Display*.

Delete a Macro

You can delete a macro from the macro editor display by selecting the macro and pressing **[Delete] [Enter]**. You will be prompted to confirm the deletion. Confirm by pressing **[Enter]** again, or abort by pressing **[Clear]**.

For Example:

Delete macro 5 from the macro list.

- ***[5] [Enter]***
- ***[Delete] [Enter] [Enter]***

Chapter 24

Using Show Control

Ion supports MIDI Show Control, MIDI Time Code, and SMPTE Time Code. Ion will communicate MIDI and SMPTE to all other Eos consoles on the network with MIDI or SMPTE enabled. MIDI and SMPTE connect to the Eos control network through a Show Control Gateway.

This chapter contains the following sections:

- ***About Show Control*** 250
- ***MIDI Show Control*** 250
- ***Time Code*** 253

About Show Control

The Ion Show Control system consists of MIDI Show Control plus any number of time code event lists (MIDI or SMPTE). There can be more than one event list of each type, but only one MIDI Show Control is available. For instance there can be multiple SMPTE Time Code lists, each with its own timing source, frame rate and event list. All can be running simultaneously.

Each event list has a label, data source and status. The status information depends on the list type and is detailed below.

Setup

Ion provides user-definable settings for show control which can be accessed by pressing **[Displays]>{Setup}>{Show}>{Show Control}**. For more information, see *Show Control, page 83*.

MIDI Show Control

Data Sources

MIDI Show Control (MSC) receives data from a MIDI input source. There are 32 available MIDI sources, numbered 1-32. MIDI consists of many types of data, but MSC looks only at MSC data. Other MIDI transmitted data is ignored by MSC.

MIDI Show Control Devices

MIDI Show Control data carries a device ID within the data packet. MSC setup allows for the specification of two device IDs: one for reception and one for transmission.

Only MSC data with the correct receive device ID, or an ALL CALL ID, will be interpreted by Ion.

All outgoing MSC data contains the specified transmit device ID within.

Ion Command Interpretation

When Ion receives a command from a MIDI source, it will look for and support the following MIDI commands in the following ways:

- Go Runs a cue
- Stop Pauses a Cue
- Resume Resumes a paused cue
- Set Controls a submaster, playback, or grandmaster
- Fire Runs a macro

The cue-related commands (go, stop, resume) affect Ion based on the cue and list fields also contained within the MSC data. Cue and list fields will correspond directly to the Ion cues and cue lists. In the command/effect tables below, if a field is present in the MSC data, the name is indicated (such as “Cue” or “List”). If it is not present in the data, a “-” is indicated. For example, “Cue -” implies that a cue is specified in the data, but not a list.

Go

When accompanying a MIDI “Go” command, data for the following fields will result in the following effects:

Cue Data Field	List Data Field	Effect
Cue	List	Runs the specified cue in the specified cue list
Cue	-	Runs the specified cue in the default cue list
-	List	Runs the next cue in the specified list
-	-	Runs the next cue in the default cue list

Stop

When accompanying a MIDI “Stop” command, data for the following fields will result in the following effects:

Cue Data Field	List Data Field	Effect
Cue	List	Stops the specified cue & list (if running)
Cue	-	Stops the running cue from the default cue list
-	List	Stops the current cue from the specified list
-	-	Stops all cues

Resume

When accompanying a MIDI “Resume” command, data for the following fields will result in the following effects:

Cue Data Field	List Data Field	Effect
Cue	List	Resumes the specified cue & list (if stopped)
Cue	-	Resumes the specified cue in the default cue list
-	List	Resumes the current cue in the specified list
-	-	Resumes all stopped cues

Set

The “Set” command allows MSC to control potentiometers using both a numeric control number (which specifies the potentiometer) and a data field (which controls the level: 0-100). Control values are as follows:

Control Value	Indication
1-127	Submaster 1-127
128	Primary playback in
129	Primary playback out
510	Grandmaster

Accompanying any of these indications in the MSC data, a numeric value of 0-100 would set the specified potentiometer to that level.

All other control values are ignored.

Fire

This command fires a macro. MSC supports macros 1 through 127 only. Therefore a numeric value of 1 - 127 would accompany this command.

Time Code

Ion has time code functionality based on a timing source and a list of events that execute at specific times of that timing source. You can compile event lists and have them play back later while following a timing source.

Time code lists can receive timing data from either SMPTE or MIDI sources. Ion accepts up to 32 SMPTE sources and 32 MIDI Time Code (MTC) sources (each are numbered from 1-32).

Enabling Time Code

Ion has global enablers for MIDI Time Code and SMPTE. These are found in Setup, *Show Control, page 83*.

If the MIDI Time Code setting is disabled, all MTC event lists are disabled as well. If enabled, all MTC lists are enabled. The same is true for SMPTE.

Timing Data

Timing data is given in the form of (hours) : (minutes) : (seconds) : (frames). Therefore a timing value of 06:25:15:20 would be 6 hours, 25 minutes, 15 seconds, 20 frames.

The number of frames per second is determined by the timing source and the event list must be set to this same number of frames when programming. Number of frames can be 24, 25, or 30.

Internal vs. external time

Under normal operation, Ion receives timing information from an input source, using a show control gateway. This timing source is referred to as external time, since it is coming from a source external to Ion.

If the external time source stops for any reason, each event list within Ion has an internal timing source which will assume control. This internal timing source requires three pieces of information to determine how to generate its timing: first time, last time, and frame rate.

When the internal clock reaches the last time, it will reset to the first time and continues running. Although external timing may run faster or slower than real time, the internal clock runs only at real time.

Color coding

The color of the time in the “Status” column of the event list display indicates the source of the timing data. The colors and indications are:

Green	-	Valid external timing is being received.
Red	-	The internal clock is the data source and is running.
Grey	-	No timing data is available.

Enabling the Clocks

The internal and external clocks can be enabled separately for each time code list. If you enable the external clock only, events will play back as long as valid timing data is received. When the timing data stops, the events will stop.

When you enable the internal clock only, it starts running immediately and triggers events appropriate to the time.

When both internal and external clocks are enabled, the internal clock does not start running until the first valid external time is received. After that, it will run whenever the external time source is absent.

Loop times

First and last times define the overall loop. Times can be set anywhere from 00:00:00:00 to 23:59:59:29. When external time is being received, Ion ignores these times. However, you should still set them to match whatever loop times the external clock is using.

Internal clock

You can set the internal clock at any time by pressing [Time] and entering a time.

Events

A time code event consists of a time and an action. An event plays back (or “fires”) when the clock reaches or passes the specified event time. Multiple events can be fired at the same time.

Ion supports three event actions: run a cue, control a submaster, and run a macro. Cues can be run from any cue list and will play on their assigned fader. Submasters can be bumped, turned on, or turned off. Submasters do not have to be assigned to a fader. Macros execute without interaction with the command line. If another macro is fired before the first macro completes, the first macro will finish its action before the second is started.

Programming an Event List

Tutorial

To program a time code event list in Ion, you first must open the show control display. Go to:

- ***Borwser>Record Target Lists>Show Control Display***

Create an event list by specifying it in the command line. This display follows the “Cue List/Cue” structure in calling out Event Lists/Events.

- ***<Event> [1] [/] [Enter]***

Specify which time code the list will respond to (MIDI or SMPTE).

- ***<Event> [1] [/] {Type} {MIDI} [Enter]***

Define the group or source of the MIDI input, between 1-32.

- ***<Event> [1] [/] {Source} [8] [Enter]***

Activate the internal and/or external timing functions (see *Internal vs. external time, page 253*). These functions are toggle on/off states.

- ***<Event> [1] [/] {Internal} {External} [Enter]***

Define the first time and last time for the event list (times are given as 00:00:00:00).

- ***<Event> [1] [/] {FirstTime} [2] [0] [1] [5] {LastTime} [2] [0] [4] [5] [1] [5] [Enter]***

Specify the number of frames per second (FPS) used by the timing source (24, 25, or 30).

- ***<Event> [1] [/] {FrameRate} [2] [5] [Enter]***

Now create the events that the list will trigger.

- ***<Event> [1] [Cue] [2] [Enter]***
- ***<Event> [2] [Cue] [3] [Enter]***
- ***<Event> [3] [Sub] [5] [Enter]***

Depending on your time settings, Ion will look for an input time (or start its own internal clock) and events will play back at their specified times.

When defining an event list it is feasible to enter multiple commands in the same command line. This can speed your programming of an event list. For example:

- ***<Event> [2] [/] {Type} {MIDI} {Source} [5] {External} [Enter]***

Learn mode

If you specify an event list in the command line, you can press the [Learn] hardkey to activate learn mode for that list. When in learn mode, an event is created with the current list time whenever a cue is activated, a submaster bump is pressed, or a macro is run.

If [Learn] is pressed while viewing any other screen than the show control display an empty event will be placed on all event lists that are in learn mode.

Multiple time code lists can be in learn mode simultaneously, each with their individual times.

Execution while Editing

If the internal or external clock is running, events will fire, even if you are in the edit screen. As soon as an event is created, the event list is resorted and the new event is eligible for playback.

Chapter 25

Multiple Users

Ion can be set to act as a separate user from other consoles on the Eos system, or it can be set to act as the same user as another console. This is done by changing the user ID.

This chapter contains the following sections:

- ***About User ID*** 258
- ***Assigning User ID*** 258

About User ID

When multiple users are on the Eos network, they can all act as one combined user, as all separate users, or any of the varying degrees between.

Any Ion console, RPU, Eos console, RVI or client software kit can be a separate user on the Eos network. Certain Eos devices work well as independent users while others are intended to share a user ID with another device. For example, consoles and RPUs are likely candidates for working with a unique user ID while RVIs and client software kits can be useful sharing an ID with another device to mirror and track programming information from a second location.

Eos devices sharing User IDs will share certain data, while those with different IDs will not. Below are the differences in multi-console data depending on User ID.

Data shared between Eos devices with the same User ID

- command line
- null channels in live
- selected channels
- filters
- selected cue
- live/blind mode
- setup>desk settings

Data specific to the Eos device, regardless of User ID

- current slider page
- current encoder page
- focus on displays without command line
- display configuration (layout, format, visible parameters, flexichannel)
- paging without changing selected target or channels

Data identical between all Eos devices, regardless of User ID

- all stage levels and edits
- all data stored in the show file
- playback, sub and grand master contents and progress

The default User ID for any Eos device is 1. You may change this based on your preference to allow/restrict the functionality described above.

Assigning User ID

User ID can be defined in the “Start Up” section of the Eos Configuration Utility (ECU - also known as the “Eos Shell”), see *Start Up Settings, page 265*. To change the Ion user ID you must exit the Ion application and enter the ECU.

You must assign user ID from each individual device. From one device you cannot change the user ID for other devices on the network.

When multiple programmers are working on an Ion system, partitioned control can be used to restrict a specific user’s access to certain channels. This can help avoid overlapping control of channels by multiple programmers at once.

For more information on partitioned control, see *Using Partitioned Control, page 259*.

Chapter 26

Using Partitioned Control

Partitioned control allows discrete control and programming of channels between multiple programmers. Partitions can restrict access to specific channels by a particular user.

This chapter contains the following sections:

- ***About Partitioned Control*** 260
- ***Setting Up Partitioned Control*** 260
- ***Partition List*** 260
- ***Creating New Partitions*** 261
- ***Using Partitions*** 262

About Partitioned Control

When multiple programmers are working on an Ion system, partitioned control can be used to restrict a specific user's access to certain channels. This can help avoid overlapping control of channels by multiple programmers at once.

Channels can be included in more than one partition.

Partitions only affect which channels a user has access to. They do not affect playback. As cue attributes are shared, in most instances programmers using different partitions will choose to store into different cue lists.

How to Use Partitions

The primary use of partitioned control is to allow more than one programmer to work on a show file at the same time without the risk of one user storing data for another user's partitioned channels.

The most common example of this situation is when one user is programming moving lights while another user programs conventional fixtures. Partitioned control allows these users to divide the channels between them so they may work simultaneously. If one user stores data using [Record] or [Record Only], partitioned control will guarantee that only data for their partitioned channels will be stored. Data for channels not in the partition will be ignored when any store commands are performed.

Setting Up Partitioned Control

Partitioned control is enabled or disabled in show settings (see *Show Settings, page 81*). Partition defaults to "Disabled". Enabling or disabling partitioned control is a systemwide setting, so all consoles on the network will adhere to the setting.

Partition List

To view the partition list, click the **{Partitions}** button in Show Settings. This display lists all existing partitions. There are four pre-programmed partitions in Ion, they are:

- **Partition 0** - No channels. This is the default for all users when partitioned control is enabled for the first time on a show. To gain control, you must select a different partition.
- **Partition 1** - All channels. Allows the user access to all channels.
- **Partition 2** - Single Parameter Channels. Allows the user access to only channels with a single parameter.
- **Partition 3** - Multiple Parameter Channels. Allows the user access to only channels with multiple parameters.

To select a partition in the list, enter it in the command line.

- **[Partition] [2] [Enter]**

If partitioned control is enabled, this will now be your assigned partition.

Creating New Partitions

To create a new partition, press:

- **{Partition} [x] [Enter]** - where “x” is a number that does not yet exist in the partition list.

This will create a new partition, highlight it in the list, and (if partition is enabled) assign it as your partition.

To assign channels to that partition, enter them in the command line:

- **[1] [Thru] [9] [6] [Enter]**

You can also use [+], [-], and [Group] to further modify the channels in the partition. When adding/subtracting channels to a partition, if you do not use [+] or [-] before channel numbers, the numbers will replace the channels in the partition, rather than adding to or subtracting from them. This overwriting does require a confirmation (if enabled in setup).

When you are finished, you can press **{Done}** to return to the setup screen.

Deleting Partitions

To delete any partition, simply type the syntax in the command line:

- **[Delete] {Partition} [5] [Enter] [Enter]** - deletes partition 5 from the list.

Preprogrammed partitions cannot be deleted.

Using Partitions

When partitions are enabled and a partition is selected, you may only record data for the channels included in the partition, with the exception of parking and unparking channel parameters or playing back cues. If you try to control a channel that is not in your partition, you must confirm that you want to control that channel. You will not, however, be able to store information for that channel.

If you select a range of channels and set them to a level and some of those channels are not included in the partition, you must confirm the command. After which, the command will be allowed on the channels not in the partition

When you record a target (cue, preset, palette), only those channels that are partitioned to you are recorded. Other programmers' record actions to the same target can add to it (they do not replace it) unless channels are shared. When shared, the last value provided at the point of the record action will be stored.

Partitions in Playback

In general, partitions do not affect playback. In Ion, how faders are configured and what is loaded to those faders is shared across all control devices.

When cues are played back from any console, regardless of partitions, that cue will be played back in its entirety. This ensures that while partitions are used, any user can activate a cue and all users will see that cue played back on the system.

To facilitate partitioned programming, Ion allows you to change the fader number of any playback, including the master fader pair on any console. This allows you to have different cue lists on the master fader pair of any consoles on the network. Using this feature, programmers can work within their partitions, using the master fader pair for their specific cue list, without affecting the cue list that is loaded to the master fader of another console.

Appendix A

Eos Configuration Utility (Eos Shell)

Overview

This appendix covers the Eos Configuration Utility (ECU) and its use. This is a component of the Eos Lighting Control System and is used for both system configuration and performing basic level test functions of your Ion console. These instructions illustrate how to use the utility, but do not specify what changes to make as these are based on your preferences and can be changed to suit your control needs.

Ion uses the ECU for the same purposes as Eos. There is a section of the ECU dedicated solely to the Ion console. It grants you the ability to configure the DMX, MIDI, contact closure, and relay ports on the back of the console. For more information see *Ion, page 275*.

What the Utility Does

Here is a brief list of some of the actions that can be performed from the ECU.

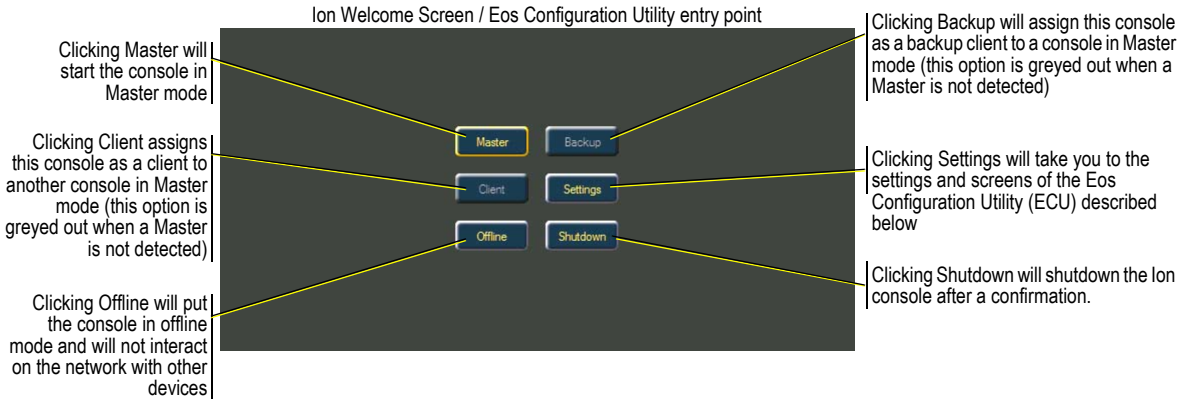
- Configure the IP address of the console
- Configure the services to provide IP addresses to other devices
- Configure the logical monitor placement to match the physical monitors
- Set the date, time and time zone
- Choose to boot the console in Master, Client, Backup or Offline mode
- Perform a simple button and encoder response test
- Update software
- Save log files

Eos Configuration Utility Reference

With an external keyboard connected to your Ion console, you can force the console to boot into the utility instead of the main console application. During the boot process, a countdown timer will appear near the Ion logo. You will have 5 seconds to hold down “e”, “o” and “s” at the same time on the connected keyboard.

Otherwise, you can enter the ECU from the Ion application by choosing **Browser>Exit Ion**.

Starting Screen


Ion Welcome Screen / Eos Configuration Utility entry point
Clicking Master will start the console in Master mode
Clicking Client assigns this console as a client to another console in Master mode (this option is greyed out when a Master is not detected)
Clicking Offline will put the console in offline mode and will not interact on the network with other devices
Master
Backup
Client
Settings
Offline
Shutdown
Clicking Backup will assign this console as a backup client to a console in Master mode (this option is greyed out when a Master is not detected)
Clicking Settings will take you to the settings and screens of the Eos Configuration Utility (ECU) described below
Clicking Shutdown will shutdown the Ion console after a confirmation.

This is the starting screen of the utility. From here you can choose to boot the console in one of several different modes, change various settings, or shutdown the console.

Master

This is the mode for using a single console on a network. The master console is the one that sends control signals out to control the network. On a system with multiple consoles, the master is the console that “client” and “backup” consoles synchronize with, making it the source of all information a client or backup console sees on the network.

Master mode can be run on Eos, Ion, and RPUs (Remote Processor Unit).

Client

Client mode requires a master console be online to synchronize with. Once this is done, a client console shares control of the system via the master. Client mode implies that the associated processor will never be responsible for supplying control data to the lighting system.

User ID determines some interaction between the client and the master console. If the client and the master console have the same User ID, they will share the same command line. If they have different User IDs, they will have independent command lines.

Client mode can be run on Eos, Ion, RPUs, RVIs, and personal desktop or portable computers.

Backup

Backup mode requires a master console be online to synchronize with. Once this is done, a backup console intakes all show data for use in the event that it needs to assume control of the lighting system.

The main difference between backup and client modes is what happens in the event of master console failure. If the master fails, a backup will automatically assume control of the system and continue on as if nothing has happened.

User ID determines some interaction between the backup and the master console. If the backup and the master have the same User ID, they will share the same command line. If they have different User IDs, they will have independent command lines.

Backup mode can be run on Eos consoles and Eos RPUs (Remote Processor Unit). For more information on Eos backup systems, see *Multi-console and Synchronized Backup, page 277*.

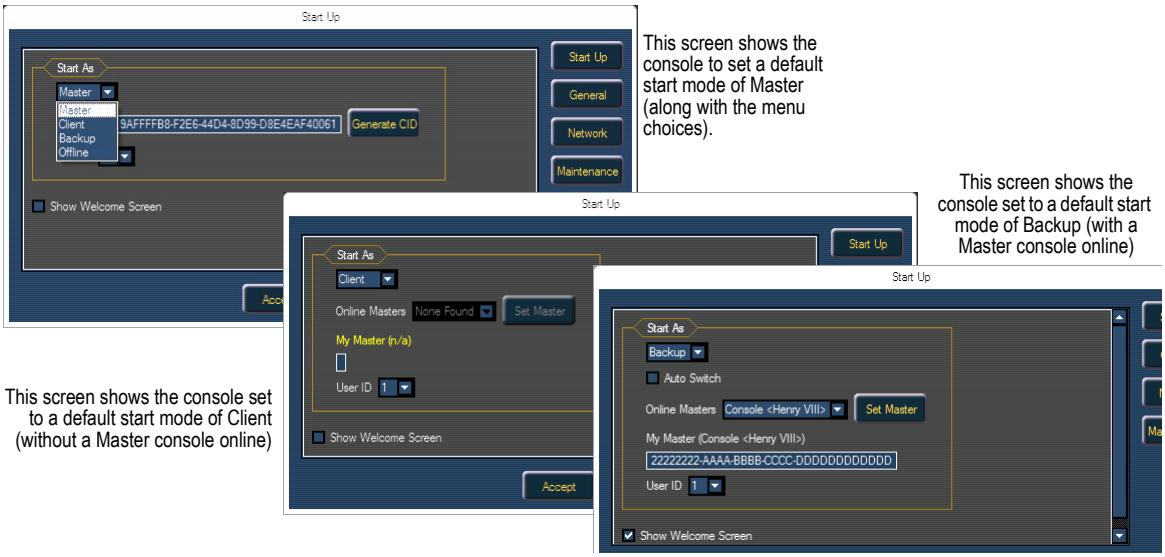
Offline

Offline mode puts the software in a state where there is no network activity, no control, no connections with other consoles or any other network devices.

This mode is primarily intended for offline editing of a show file.

Offline mode can be run on Eos, Ion, RPUs, RVIs, and personal desktop or portable computers.

Start Up Settings



This screen shows the console to set a default start mode of Master (along with the menu choices).

This screen shows the console set to a default start mode of Backup (with a Master console online)

This screen shows the console set to a default start mode of Client (without a Master console online)

Start Up settings are default settings used each time the console is booted. You can choose to set the default operational mode to Master, Client, Backup or Offline.

When you choose client or backup mode, the console will show you a list of possible “Online Masters”. Once chosen, the client or backup console will automatically connect to the selected master console.

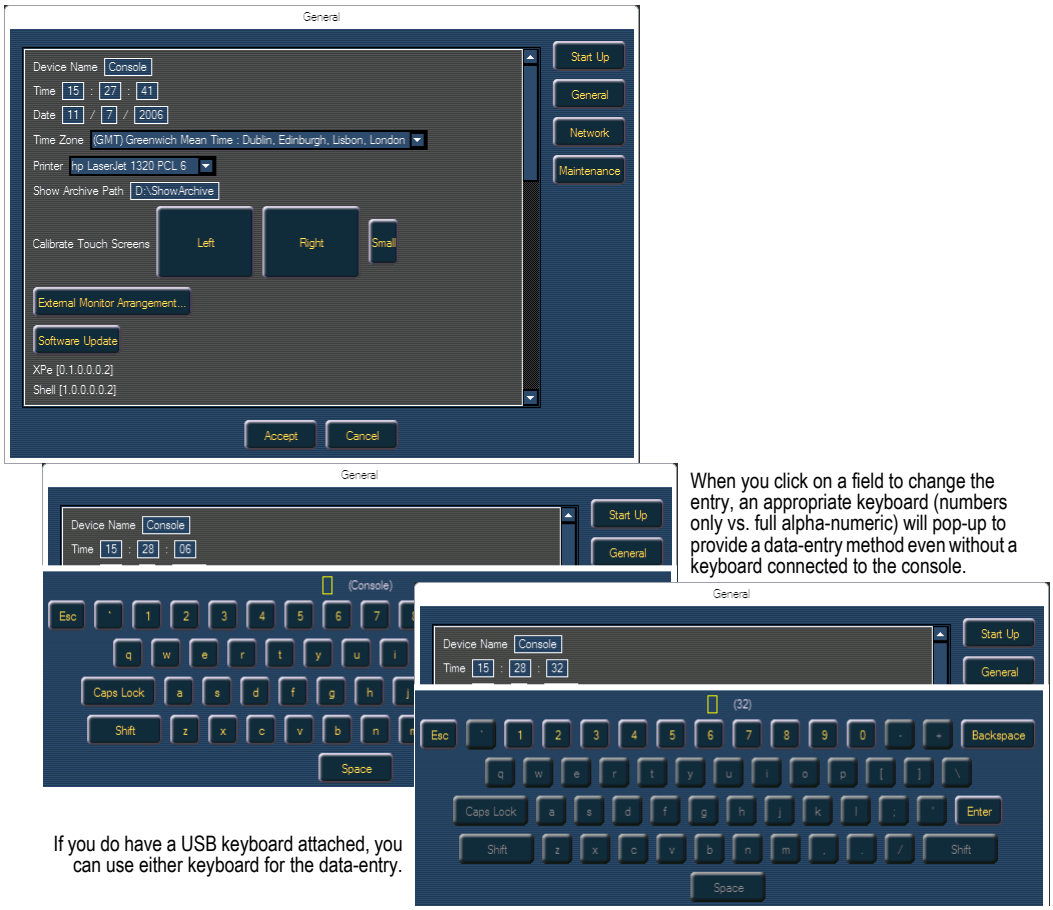
User ID

This is an identifier for this console on the network. Valid IDs range from 1 to 255. User IDs can be shared between devices on the network. Doing so results in a shared command line and channel selection.

Show Welcome Screen

When this is checked, Ion will boot into the Configuration Utility every time instead of booting directly into the main Ion application.

General Settings


General
Device Name Console
Time 15 : 27 : 41
Date 11 / 7 / 2006
Time Zone (GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London
Printer hp LaserJet 1320 PCL 6
Show Archive Path D:\ShowArchive
Calibrate Touch Screens
Left
Right
Small
External Monitor Arrangement...
Software Update
XPe [0.1.0.0.0.2]
Shell [1.0.0.0.0.2]
Accept
Cancel
Start Up
General
Network
Maintenance
When you click on a field to change the entry, an appropriate keyboard (numbers only vs. full alpha-numeric) will pop-up to provide a data-entry method even without a keyboard connected to the console.
If you do have a USB keyboard attached, you can use either keyboard for the data-entry.

Device Name

This specifies the name this Ion console will use to identify itself on the network to other devices.

Time

The time the console is using. This can be set manually (direct data-entry) or via SNTP (Simple Network Time Protocol) time service. Please see *Network Settings, page 268* for more information.

The time is displayed in a 24-hour format as HH : MM : SS.

Date

The date the console is using. This can be set manually (direct data-entry) or via SNTP (Simple Network Time Protocol) time service. Please see *Network Settings, page 268* for more information.

The time is displayed as MM / DD / YYYY.

Time Zone

The time zone the console is using. This is an offset from Greenwich Mean Time (GMT). Each setting in the pull-down list displays the offset, the name of the time zone and a couple of cities in that time zone.

Printer

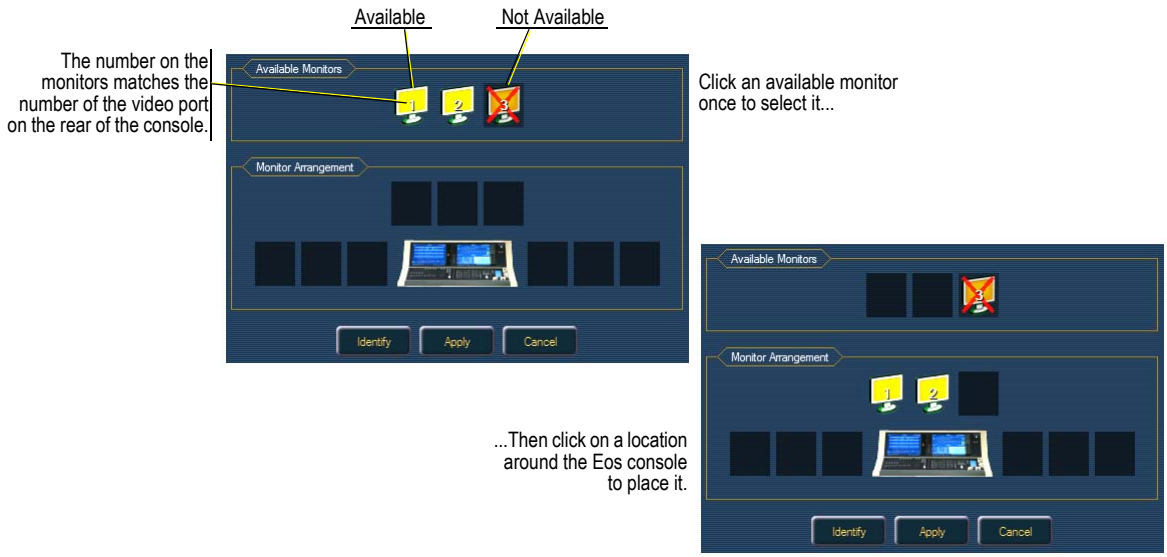
This displays the currently selected printer type. The pull-down list will only display supported printers.

Show Archive Path

This is the default location to save show files. The full path must be typed in and specified in a legal Windows format. The default location is a folder on the D: drive.

If you decide to change this setting, it is recommended that you keep this location on the D: drive. This will keep your show files safe during software updates that may include re-imaging the C: drive.

External Monitor Arrangement


Available
Not Available
The number on the monitors matches the number of the video port on the rear of the console.
Available Monitors
Monitor Arrangement
Identify
Apply
Cancel
Click an available monitor once to select it...
...Then click on a location around the Eos console to place it.

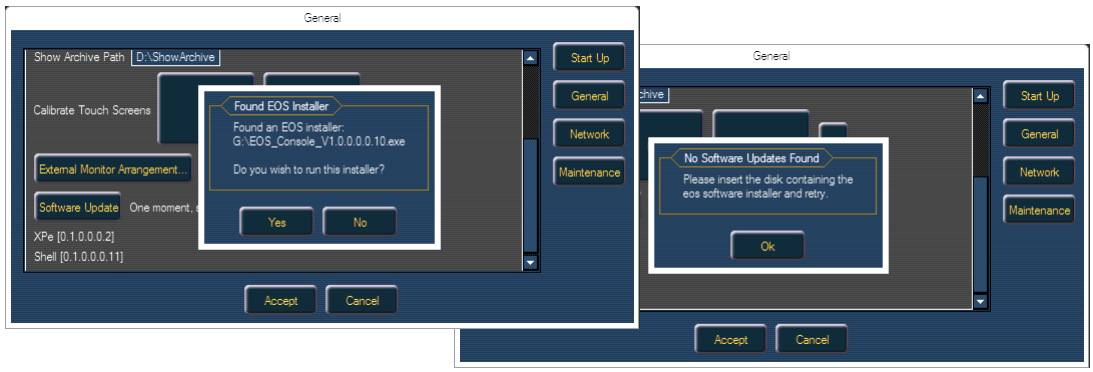
If you plan on using a mouse, external monitors must be placed in a logical manner around the console. This will dictate how and where the pointer moves from one screen/monitor to another. Generally speaking, you will want the logical placement on this screen to match your physical placement.

Click the **Identify** button to display the video port numbers that your monitors are connected to on the physical monitors to confirm where you placed them (They should match this configuration screen).

Apply will save and use your settings.

Cancel will not save your changes and will close the utility.

(Ion) Software Update



This option is used to update the software of the Ion console itself. It does *not* affect or update the software in any other networked device such as a Net3 Gateway.

When you click on **Software Update**, the Ion console looks at the root directory of any removable storage device (any connected USB drive or CD) for an Ion console software update file. You will be shown the name of the updater file before being given the choice to install it or not.

You will also receive a message if no software update file can be found.

Network Settings

Network Control Priorities

This is where you specify the priorities used by this console's control level information.

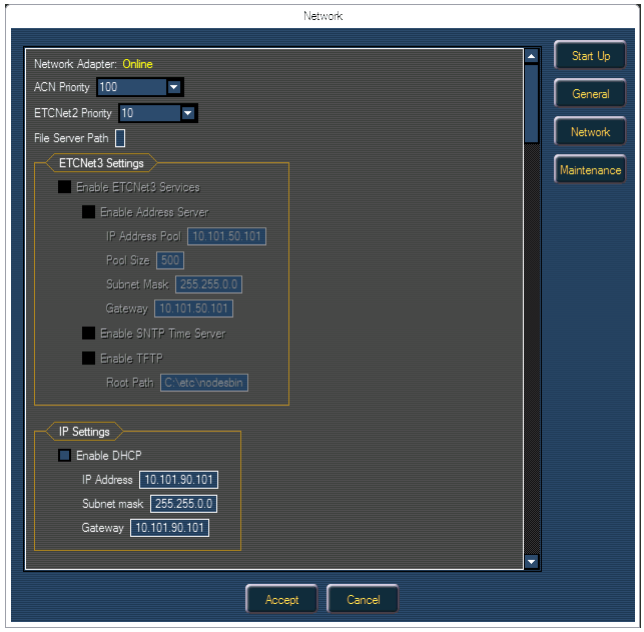
Net3 Services Settings

These are settings for the network services that may be running on your Ion console.

If you are unable to enable them, they are not currently installed on this console.

Ion Console IP Settings

This is where you specify the IP address to be used by this console (manually) or how it acquires an IP address (dynamically via a DHCP server or a link-local address).



Network Adapter

This reports if the network adapter is "Online" (configured, connected to a network and operational). It reports as "Offline" if any one of the above conditions is not true.

ACN Priority

This sets the control priority for ACN data from this console. The valid range for this setting is 1 (lowest) to 200 (highest). This is the reverse of ETCNet2.

ETCNet2 Priority

This sets the control priority for ETCNet2 data from this console. The valid range for this setting is 20 (lowest) to 1 (highest). This is the reverse of ACN.

File Server Path

This is a setting for an alternate show file storage location. It will accept any Windows standard file path name. After setting this location, it will appear as an option within the save show dialog in Ion. File path example: D:\storeFilesHere

Net3 Settings

All settings in this section require a reboot of the console before they will take effect. If this section is greyed out, or you are unable to change any settings, you don't have Net3 Services installed on your console.

Enable Net3 Services

Net3 Services are a suite of services that provide infrastructure support for a Net3/ACN network. Those services are a dynamic IP address server, a network time server and a file server. Each of these services are described below.

Unchecking this box acts to disable all of the Net3 Services. Checking the box only enables services selected to be active.

Enable Address Server

Net3 Services uses a DHCP (Dynamic Host Configuration Protocol) address server. DHCP is a TCP/IP protocol that dynamically assigns an IP address to a network device when it requests one.

This is a small and simple DHCP server that is intended to be used on non-routed networks. It will not serve IP addresses across a router.

CAUTION: *There should only be a single DHCP server active on a network. It is possible to start more than one DHCP server on a single network (nothing is built-in to DHCP servers to prevent this from happening). If this occurs, it will result in unstable conditions and possibly result in network communications failures.*

Clicking in the enable box will start the DHCP server in the Ion console. It will use the settings below to determine which IP addresses it gives out.

- ***IP Address Pool*** - This sets the starting IP address of the range of IP addresses the DHCP server will give out.
- ***Pool Size*** - This sets how many IP addresses the DHCP server will give out. A setting of 500 means it will give out IP addresses to the first 500 devices that ask for an IP address.
- ***Subnet Mask*** - This sets the logical network size vs. the device address. ETC's default is 255.255.000.000 (class B). This is the subnet mask that the DHCP server will give to network devices.
- ***Gateway IP*** - This specifies the IP address of a router if one is present on your network. This is the gateway IP address that the DHCP server will send to network devices to use.
  If you are on a flat or non-routed network, the Gateway IP address should match the IP address of the device. In order to configure this DHCP server to send out matching gateway IP addresses, **configure this gateway IP address to match the IP Address Pool field**. Then the DHCP server will give out a gateway IP address that matches the IP address.

Enable SNTP Time Server

Clicking in the enable box will start the SNTP (Simple Network Time Protocol) service. You determine if the service is running as a client (receiving time messages) or as a server (sending time messages) during the installation process.

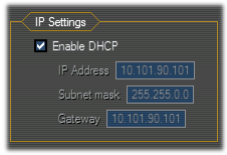
Enable TFTP Server

Clicking in the enable box will start the TFTP (Trivial File Transfer Protocol) server.

- ***Root Path*** - This sets the directory where files are to be served through TFTP. This must be the full path to the directory, including drive letter. For example: C:\etc\nodesbin

(Ion) IP Settings

These are the settings that determine the *method* to get an IP address and/or the *actual* IP address information that Ion uses for network communication.



If DHCP is selected, the “in use” IP address information is displayed.

Enable DHCP

Clicking in the enable box will set Ion to get its IP address dynamically from a DHCP server. While the console is starting, it will ask for an IP address from a DHCP server. If one responds, it will use the assigned IP address.

If no DHCP server is available, Ion will default to a self-generated link-local IP address in the range of 169.254.x.y. The IP address used by Ion in this configuration *may* change dynamically as needed. A change should typically only occur when there are changes to the network configuration or to resolve an IP address conflict.

Enabling or disabling the DHCP setting will require you to reboot Ion for the new setting to take affect.

Note: *You cannot set Ion to receive an IP address via DHCP and act as a DHCP server at the same time. It can either send dynamic addresses or receive them, but not both at the same time.*

IP Address

If DHCP is **disabled**, you set the Ion IP address here. This is a static IP address and will remain set until changed by a user.

If DHCP is **enabled**, this field will display the IP address that is being used by the console (whether it is served via DHCP or a self-generated link-local IP address).

Subnet Mask

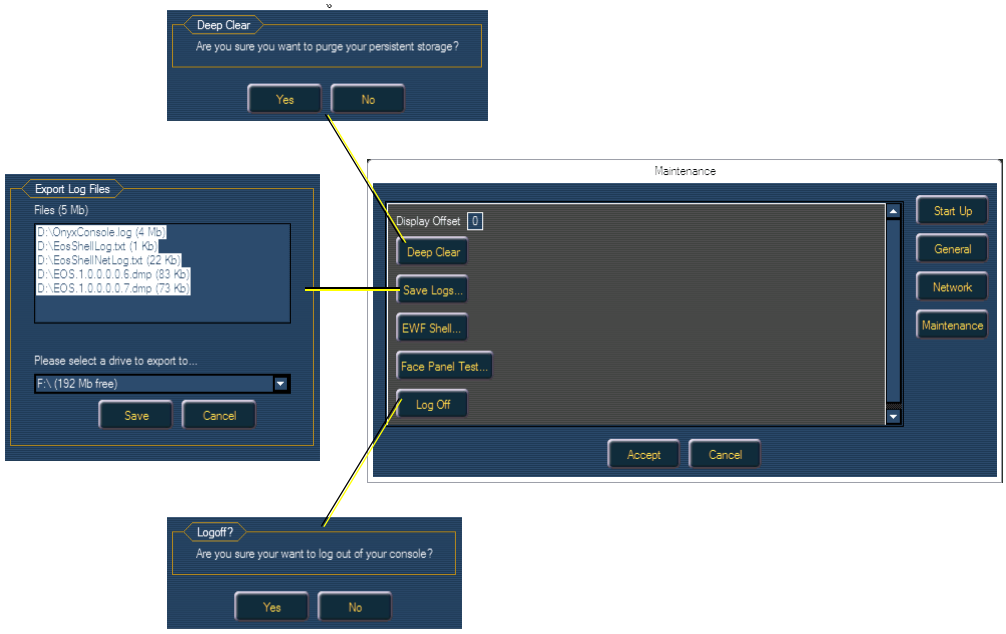
If DHCP is **disabled**, you set the Ion subnet mask here. This is a static setting and will remain set until changed by a user.

If DHCP is **enabled**, this field will display the subnet mask that is being used by the console (whether it is served via DHCP or a self-generated link-local IP address).

Gateway

If DHCP is **disabled**, you set the gateway IP address here. This is a static gateway IP address and will remain set until changed by a user.

If DHCP is **enabled**, this field will display the gateway IP address that is being used by the console (whether it is served via DHCP or a self-generated link-local IP address).



Deep Clear

Deep Clear functions in the same way that “New” does from the File menu or “Reset System” does from the Clear menu (both are found within the browser).

The advantage of deep clear is that you can clear all console data before reloading the console’s current state during boot. This is helpful if you are moving a new console onto the network and don’t want it to suddenly take control of a system or if you somehow end up with a corrupt show file that is causing issues upon boot.

It’s worth noting that Deep Clear (like Reset System and File>New) does not reset any of the settings in the Eos Configuration Utility (ECU) like its operational mode or IP address settings. Everything in the ECU remains as it was last configured.

Note: *It is recommended that you perform a deep clear after a software update.*

Save Logs...

Clicking on the button displays a dialog box prompting you to save the console log files for troubleshooting purposes. You have the option to select or deselect any of the various individual log files to be saved.

You will see a drop down menu to select the target export location from any available write-enabled removable media such as a USB drive.

If you experience software problems with your system that we are unable to reproduce, sending these log files to ETC Technical Services (see *Help from ETC Technical Services, page 3*) can help us isolate the issue.

EWF Shell...

This section is password protected and intended for use by ETC Factory-authorized technicians only.

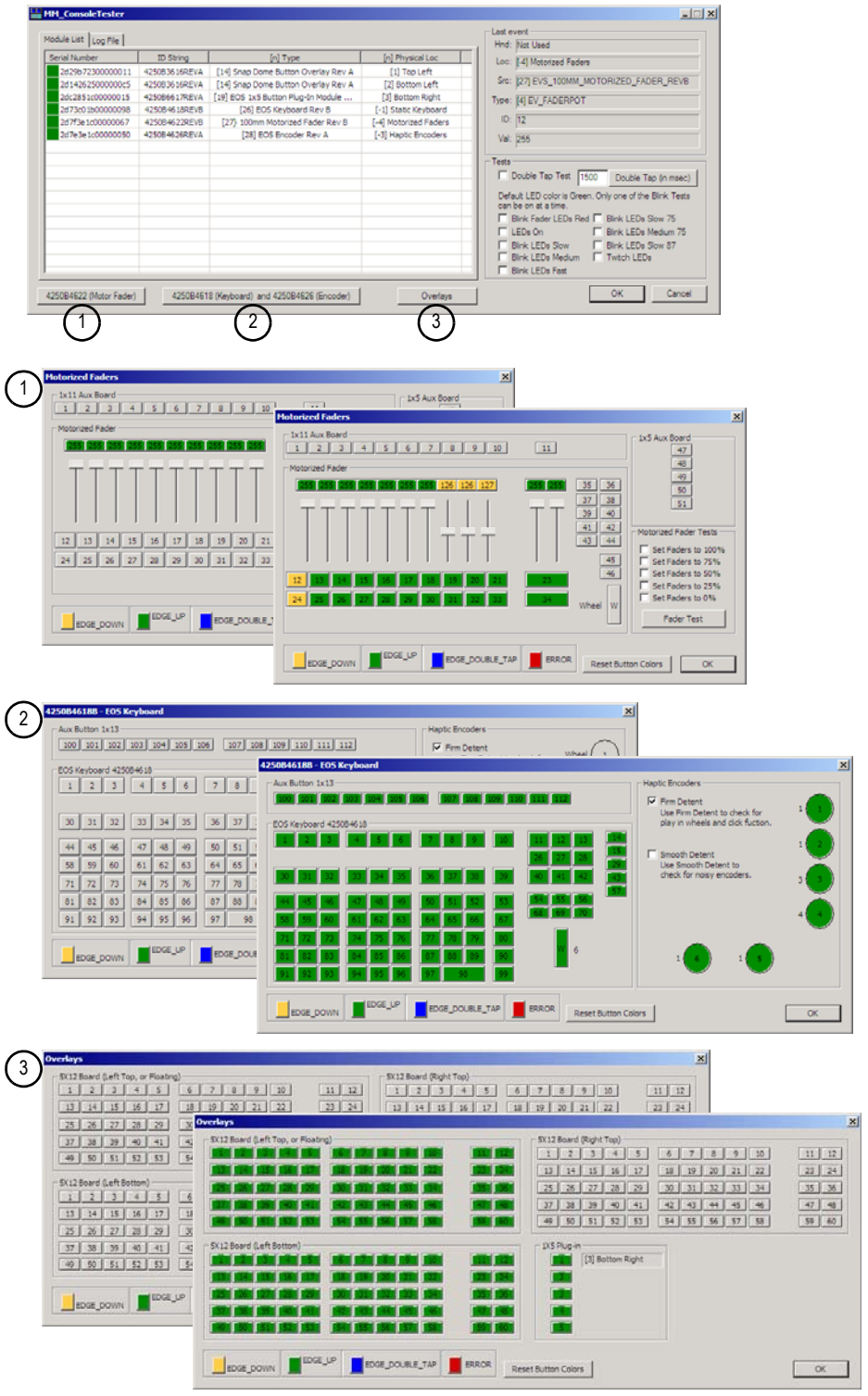
Log Off

This will log off the current user.

Face Panel Test...

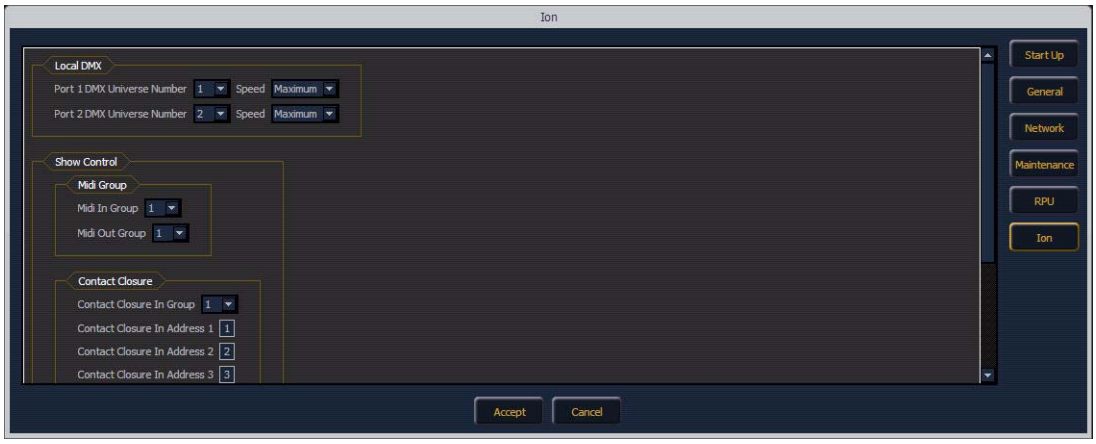
Face Panel Test provides a way to verify the functional state of all of the keys, encoders and sliders on the Ion console. The screens are very straightforward. For field diagnostics, you shouldn't need more than the sections of Ion Keyboard.

Press/move every key and verify that those events register on the diagnostic test screen.



Ion

This screen allows you to configure the ports on the back of the Ion console.



Local DMX

This allows you to change the universe or port speed for the two DMX ports on the back of the Ion console. Universes can be from 1-64.

The default settings are Universe 1 and Universe 2 respectively with both ports set to maximum speed (recommended).

Show Control

MIDI

Allows you to set the group number for the MIDI In and MIDI Out ports. Group numbers can be from 1-32. Default for both ports is 1.

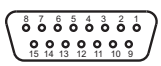
Contact Closure (remote trigger connector)

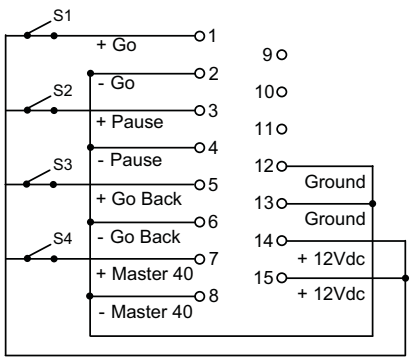
Allows you to set the Group and Address In values for the remote trigger input on the back of Ion.

Relay Out (remote trigger connector)

Allows you to set the Group and Address In values for the remote trigger port on the back of Ion.

Remote Trigger connector pinout





Appendix B

Multi-console and Synchronized Backup

Overview

This appendix outlines the procedures required to use multiple Eos/Ion control devices (such as an Ion console, Eos console, Remote Processor Unit (RPU), Remote Video Interface (RVI), or PC with client dongle) simultaneously on a network. It outlines the setup, configuration, and behavior that is entailed in an Eos/Ion multi-console scenario.

Eos/Ion multi-console functionality is also used to provide synchronized backup of your show while running multiple Eos devices on the network.

Definition of terms

Familiarize yourself with these terms prior to setting up a multi-console system.

Note: *Ion consoles, Eos consoles, RPUs, or a PC running Eos with a client dongle may all be considered active units on an Eos network. For the sake of brevity, the term "Eos" is used to represent any and all of these options in the following descriptions.*

- **Primary** - When an Eos is configured as a primary, other Eos devices can connect and synchronize with it. If using a backup processor, the primary is the Eos that will be backed up. Only Eos consoles and RPUs can be set to primary. By default, all Eos consoles will start up as a primary.
- **Backup** - This Eos is capable of taking control of the system if the primary fails. You may input data and run your show from a backup. There can only be one backup in an Eos network and you must specify which primary it is backing up. Only Eos consoles and RPUs can be set to backup.
- **Client** - Any online Eos that is not the master or backup is a client. Client data is sent and received over the network, and clients will synchronize with a designated primary.
- **Offline** - Any Eos controller that is disconnected from the Eos network. Changes to show data performed on an offline Eos will not affect the rest of the Eos network or the lighting system.
- **Master** - The Eos that is currently sending control data to the lighting system is the master. In most circumstances this is also the primary. Should a primary fail and a backup takes control, then the backup will be acting as the master.
- **Tracking** - Any console that is synchronized with a master is tracking. Once a backup takes control it becomes a master and is no longer tracking.
- **User** - A user is an Eos defined by a user ID. If it has a unique user ID, the Eos will operate separate from other Eos devices on the network, but still track show data. If it shares a user ID, Eos will synchronize with like IDs. See *User ID and multi-console features, page 280*.
- **System** - One primary Eos, one backup Eos, and (if available) multiple clients synchronized together.

Multi-console setup

When using multiple Eos/Ion consoles on the network, you should adjust some of the settings of your devices to ensure optimal functionality.

Note: *It is recommended that you perform the following setting changes **before** connecting your Eos device(s) to the network. After the changes are complete, connect to the network and reboot the device.*

Designate Master

By default, all Eos devices will boot as a master. When using multiple Eos devices on the network, only one should be designated as a master. Other Eos devices should be configured as the backup (only one per system) or clients. There can be a maximum of 12 Eos devices connected to a master.

To change this setting, you must exit the Eos/Ion software (**Browser>Exit Ion**) and then designate the Eos device as master, backup, or client as described in the ECU appendix (see *Starting Screen, page 264*).

DHCP Server

DHCP server supplies IP addresses to network devices. Only one Eos device [typically the Primary (Master)] on the network is necessary to do this properly. Therefore you should disable the DHCP server on all Eos devices except for the intended primary.

To disable the DHCP server on your Eos device see *(Ion) IP Settings, page 271*.

Change Device Name

To easily identify your Eos on the network, change the device name to be representative of the device (such as “Booth Primary” or “Tech Backup”). This is done in *General Settings, page 266*.

Change IP Address

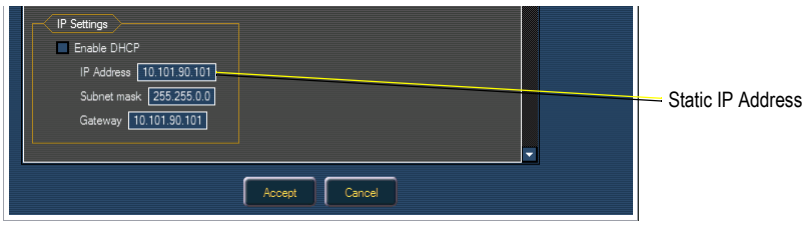
All Eos/Ion consoles by default have the same static IP address. All Eos RPUs also, by default, have the same static IP address.

Default Eos Console IP Address:10.101.90.101

Default Eos RPU IP Address: **10.101.95.101**

Each Eos device on the network should be given a unique IP address. If running multiple devices of the same type (for example - two consoles, or two RPUs), you must alter the default static IP addresses to ensure proper functionality.

Changing the static IP address is done through the ECU (see *Network Settings, page 268*), on the "Network" page. Manually change the IP address of any non-master Eos device by clicking in the IP Address field and entering the new number from the keyboard. When done, press **[Enter]**.



Note: *It is recommended that you alter the very last digit of the static IP address by an increment of one for each additional Eos device on the network. Therefore, if the master ends in "101", change the backup to end is "102", a client to end in "103" and so on.*

User ID and multi-console features

Set in the ECU (see *Start Up Settings, page 265*), User ID is an Eos-specific identifier that can be set uniquely for each Eos device or can be shared between multiple devices allowing for shared data between consoles. The user ID can be set anywhere from 1 to 10.

Eos devices sharing User IDs will share certain data, while those with different IDs will not. Below are the differences in multi-console data depending on User ID.

Data shared between Eos devices with the same User ID

- Command line
- Null channels in live
- Selected channels
- Filters
- Selected cue
- Live/blind mode
- Setup>desk settings

Data specific to the Eos device, regardless of User ID

- Current slider page
- Current encoder page
- Focus on displays without command line
- Display configuration (layout, format, visible parameters, flexichannel)
- Paging without changing selected target or channels

Data identical between all Eos devices, regardless of User ID

- All stage levels and edits
- All data stored in the show file
- Playback, submaster, and grand master contents and progress

The default User ID for any Eos device is 1. You may change this based on your preference to allow or restrict the functionality described above.

Note: *After you have completed the setting changes described above, connect your Eos device to the network and reboot the device.*

Multi-console backup

Within an Eos/Ion system, you have the added bonus of show data backup. Any client on the system will receive all show data updates and stage levels so that, in the event of a master failure, any client will be capable of taking control of the system without a loss of show data.

Synchronized Backup

Once you have changed settings to facilitate a multi-console system on the network, you may activate synchronized backup to ensure show data security.

Eos/Ion synchronized backup is designed so that during normal operation the primary (master) console controls the lighting system and any console configured as backup or client synchronize with the primary. The following activities will synchronize between consoles when operating in a backup system:

- Playback
- Record operations
- Manually set data
- Show file and show data

Only Ion consoles, Eos consoles, or RPUs can function as a master or backup.

Setting up Synchronized Backup

Before backup is possible, you must have at least two Eos devices (Consoles or RPUs only) connected to the network. One must be assigned as primary and one as a backup.

To assign a backup to a primary:

Step 1: Exit the Ion/Eos environment (**Browser>Exit Ion**) on the console you wish to act as the backup. This will send you to the ECU welcome screen.

Step 2: Click on the **{Backup}** button in the welcome screen. The console will then startup the Eos software, this time in backup mode. Eos will try to connect to a master console. The CIA will say “Waiting for Primary. One moment please...”.

Step 3: If the backup doesn’t connect after a few moments, click the **{Troubleshoot}** button in the CIA. This will open the network configure screen in the CIA.

Step 4: Select a master console from the list on the right. If no masters are available in the list, a master console is not connected to the network.

Step 5: Press **{Change Master}**. The backup Eos will synchronize with the master.

The CIA displays the current status of the backup.

If the master goes offline for any reason, the backup will automatically takeover as the master. This happens with virtually no effect to the backup other than a change in the CIA heading, which will change to the following status.

If you enter the Network>Configure screen, it will have changed to the following.

Your backup is now acting as the master and is controlling the lighting system.

Note: *If the primary comes back online, it will **not** retake control of the lighting system. The primary will wait until it is redesignated as the master and the backup is reassigned to it.*

If at any point you change masters, you must individually reassign any clients to the new master through the network configure screen.

Backup Scenarios

Console and console

Two consoles can be used to provide backup. Either can be configured as the primary or the backup. If the master consoles fails, the second console will take control with full show data intact.

This is a useful scenario for touring multi-user applications.

RPU and console

One RPU and one console can be used as a backup option. In this configuration, it is recommended that you set the RPU as the primary and the console as the backup. In this scenario, should the RPU go offline, you will still have the full functionality of the console user-interface at your disposal.

RPU and RPU

Two RPUs may serve as primary and backup also. A backup system of this type can support many client consoles at once, which you may turn on and off as needed without the need to reset to a different master each time.

This application is ideal for permanent installations requiring synchronized backup.

Appendix C

Remote Processor Unit (RPU)

Overview

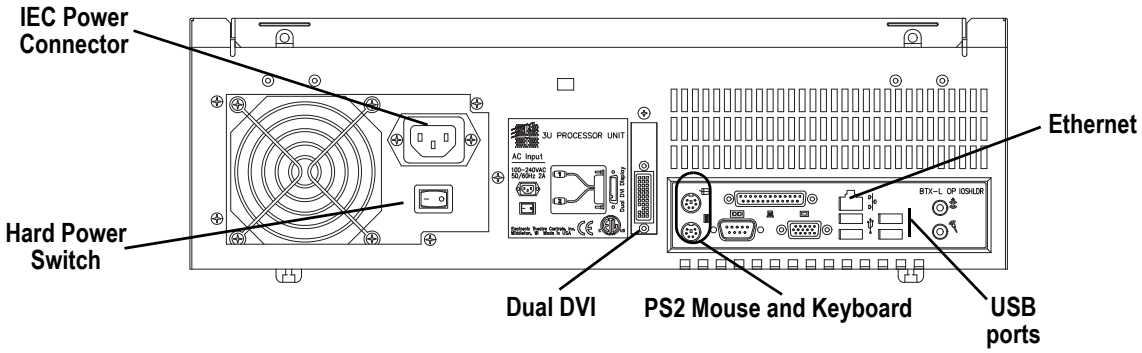
This appendix outlines the setup and configuration of your Eos Remote Processor Unit (RPU). The Eos RPU can be used as a primary, backup, or client processor in an Eos system (see *Large System Riser, page 19*). It can also be used for independent playback applications.

Eos RPU ships with the following:

- Remote Processor Unit
- USB Keyboard
- USB Mouse
- Rack Mount Hardware Kit
- IEC Power cords with varying connectors
- Dual-DVI video Y-adapter - (screen resolution of 1280x1024 required)
- DVI (male)-to-VGA (female) adapter
- Eos System Recovery CD

Hardware Setup

Rear Panel



Step 1: Attach the appropriate IEC power cord to the power connector.

Step 2: Attach the dual DVI connector/Y-adapter to the DVI port. If you have VGA monitors, attach the VGA adapters to the DVI adapter. *Do not* use the VGA connectors on the back of the RPU.

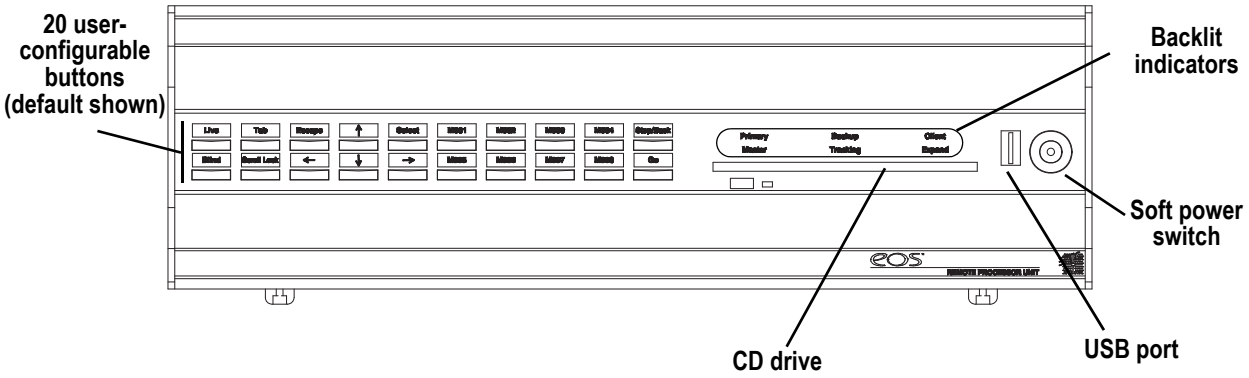
Note: *Monitor screen resolution must be at least 1280x1024.*

Step 3: Connect the USB mouse and keyboard to the USB connectors. If you want to use a PS2 mouse or keyboard (not provided), you may use the appropriate connectors on the RPU.

Step 4: Attach a network ethernet cable to the ethernet port.

Step 5: Once all accessories have been connected, you may activate the hard power switch on the rear panel.

Front Panel



- The soft power switch activates the RPU (check rear panel to ensure power is connected and hard power switch is on).
- Backlit indicators identify the operating status (master, backup, client, and so on) of the unit.
- USB port is provided for easy show loading to or from a USB storage device.
- CD drive is used for full software installation from a CD.
- 20 buttons are configurable from the Eos Configuration Utility (ECU). They are set to a default configuration. The label strips for these buttons are removable and reversible. Any changes to the button configuration can be written on the opposite side in pencil.

Start Up

After connecting power to the unit, press the soft power button on the front of the console.

By default, the RPU will boot into the Eos environment as a “master”. If you wish to designate your RPU as something other than a master, you must exit the Eos environment and choose a different designation from the Eos Configuration Utility welcome screen.

For more information on multi-console terms such as “Master” or “Backup”, please see *Multi-console and Synchronized Backup, page 277*.

Software Configuration

Settings for the RPU can be altered in the Eos Configuration Utility (ECU). The 20 buttons on the front panel of the RPU are configurable from the “RPU” section of the ECU.

To configure the RPU buttons:

Step 1: In the Eos browser, select **File>Exit Eos** and confirm the selection. Eos will close and you will enter the Eos welcome screen.

Step 2: Click on the **[Settings]** button. This will open the ECU.

Step 3: On the right side of the screen, click on the “RPU” button to enter the RPU button setup. A virtual display of the RPU buttons is displayed with the current button settings labeled on each button.

Step 4: Click on a button you wish to alter. A button window will open.

Step 5: Click on the type of button you want it to be (Macro or Eos Hard Key).

- **If Macro** - Click on the Macro # box and enter the desired macro number from the keyboard and press enter. Then click “Accept”.
- **If Eos Hard Key** - Click on the “Eos HardKey” drop down menu and select the hard key you wish to use. Then click “Accept”.

Step 6: Repeat this process for any other buttons you wish to reconfigure.

Step 7: To restore the default buttons at any time, click the “Restore Defaults” button.

To import a button configuration:

You may import an RPU button configuration file from a USB device.

Step 1: Click the “Import” button in the RPU section of the ECU. The RPU will search for valid RPU button file.

Step 2: If a valid file is found, the ECU will ask you if you want to import the settings. Click “Yes”. The settings will be imported.

Step 3: Click “Ok”.

To export a button configuration:

You may export your RPU button configuration to a USB device.

Step 1: Click the “Export” button in the RPU section of the ECU.

Step 2: If a USB drive is available, the ECU will ask you to choose the desired drive from the drop down menu. Click on the desired USB drive.

Step 3: Click “Accept”. The button configuration will be saved to the USB drive.

Step 4: Click “Ok”.

For more information on settings in the ECU, please see *Eos Configuration Utility (Eos Shell), page 263*.

Basic Use Guidelines

Displays

The RPU can be used with either one or two DVI monitors. You can collapse or expand the CIA on the displays by engaging the scroll lock and pressing **F5**. If you are using one monitor, you may find this feature useful in increasing the efficiency of your available display area.

Net3 Services

By default, both Eos and the Eos RPU ship with all Net3 services enabled.

When used in a multi-console backup system, you must disabled Net3 services for the intended backup device. If the RPU is the intended primary (recommended, see *Backup Scenarios, page 283*), some Net3 services must be disabled on the intended backup device (console or RPU).

You must disable the DHCP server and TFTP server. You must also change the SNTP server to “client” to enable time synchronization between Eos devices. All of this is done using the Eos Configuration Utility (See *Net3 Settings, page 269* and *(Ion) IP Settings, page 271*).

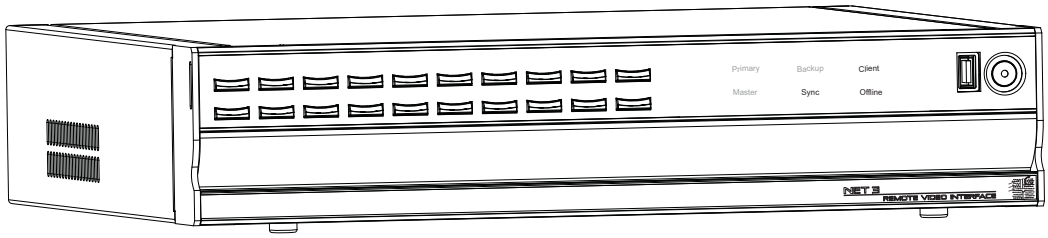
Appendix D

Remote Video Interface (RVI)

Overview

The RVI functions as a remote user interface to access and modify the contents of an entire Eos show file. You may configure the RVI to run Eos software in “Client” or “Offline” mode.

This appendix outlines the setup and simple configuration of your Remote Video Interface (RVI) for use with the the Eos Control System.

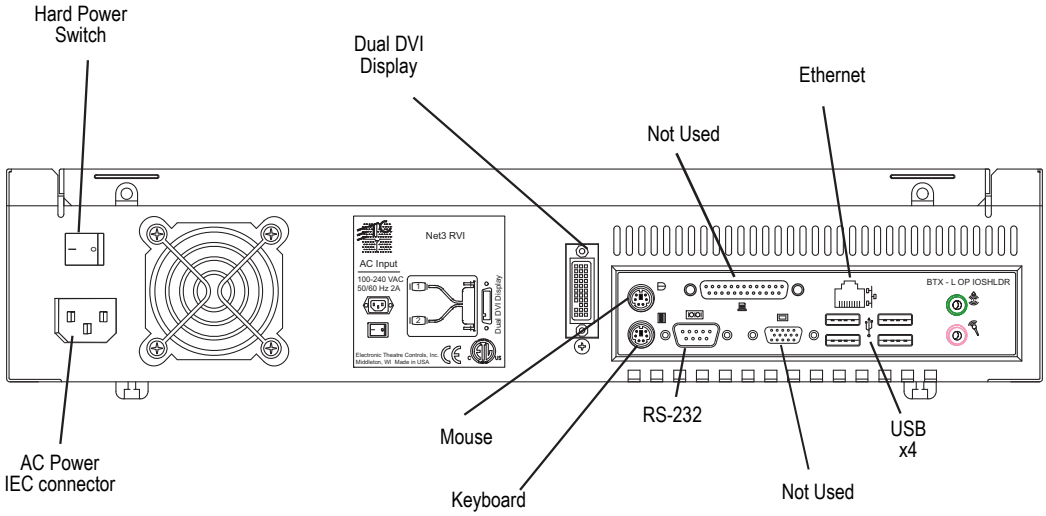


Electrical Specification

- Operating voltage 100-240 VAC, 50-60Hz (2 amps at 120 VAC)
- Ambient temperature and humidity 0 - 35° C, 95% non-condensing humidity, maximum
- Storage temperature and humidity 0 - 35° C, 95% non-condensing humidity
- CE and ETL Compliant
- Installation Category II, indoor use only
- May operate up to 2000 meters altitude

Hardware Setup

Rear Panel



Step 1: Attach the appropriate IEC power cord to the power connector, then to an AC receptacle.

Step 2: Attach the dual DVI connector/Y-adapter to the DVI port.

Note: *If you have VGA monitors, attach the VGA adapters (provided) to the DVI Y-adapter. Do not use the VGA connectors on the back of the RPU.*

In Eos, the minimum screen resolution must be at least 1280x1024 with 32 bit color.

Step 3: Connect the USB mouse and keyboard to the USB connectors. If you wish to use a PS2 mouse or keyboard (not provided), use the appropriate connectors on the RVI.

Step 4: Attach a network ethernet cable to the Ethernet port. All communications to the associated control console are made over this Ethernet connection.

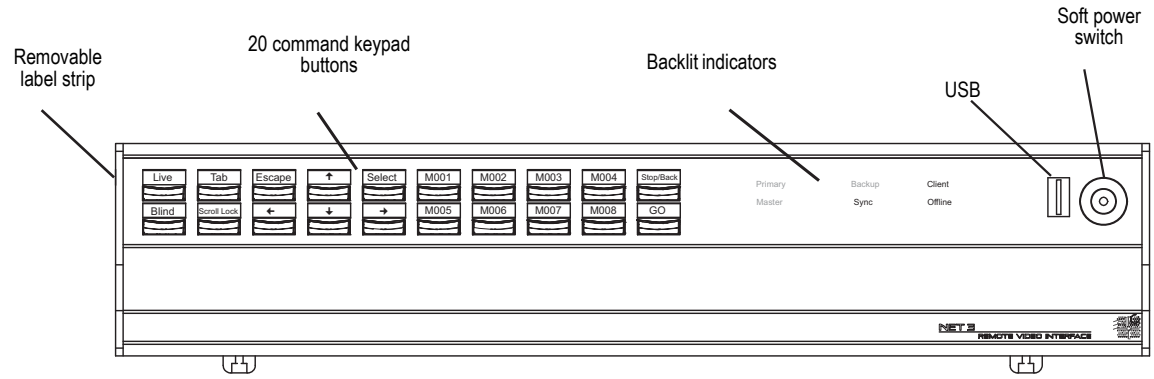
- Connection to the console may be made either directly using a Cat5 or better null-modem cable or through an Ethernet hub or Ethernet switch using standard Cat5 or better patch cables.

Step 5: When all connections are made, activate the hard power switch on the rear panel.

Step 6: Press the soft power switch, on the front of the unit, to power up the RVI.

Note: *If the unit does not power up, check the hard power switch on the rear panel, to ensure it is switched on.*

Front Panel



Backlit LEDs

LEDs indicate which mode the unit is operating in (client or offline) and the status of the operation (sync).

- The “Client” LED will illuminate when the unit is connected as a client of the master Eos console.
- Additionally the “Sync” LED will illuminate when the data has been synchronized to the master console.
- The “Offline” LED will illuminate when the unit is running offline and is no longer in “Client” mode.

Command Keypad Buttons

The 20 buttons are configurable from the Eos Configuration Utility (ECU). They are set to a default configuration. The label strips for these buttons are removable and reversible. Any changes to the button configuration can be written on the opposite side in pencil.

USB Port

The USB port on the front of the RVI unit may be used to connect a USB storage device for show downloading, uploading, or software updates.

Start Up

At initial startup, the RVI will display the Eos and the Congo logos. Use the mouse to select the Eos operating system. The RVI will initialize to the Eos environment each time the power is cycled, unless you choose to revert the operating system in the related settings menu (see “Switch to Congo from Eos Operating Mode,” in the *Net3 Remote Video Interface Setup Guide,* page 4).

CAUTION: *If you “Exit Eos” and enter the ECU, do not select the “Master” or “Backup” buttons that are displayed in the ECU welcome screen.*

The Net3 RVI will only function as a “Client” on the Eos network or “Offline”.

Basic Use Guidelines

Displays

The RVI can be used with either one or two DVI monitors. You can collapse or expand the CIA on the displays by engaging the scroll lock and pressing **F5**. If you are using one monitor, you may find this feature useful in increasing the efficiency of your available display area.

Button Configuration

Settings for the RVI can be altered in the Eos Configuration Utility (ECU). The 20 buttons on the front panel of the RVI are configurable from the “RPU” section of the ECU.

To configure the RVI buttons:

Step 1: In the Eos browser, select **File>Exit Eos** and confirm the selection. Eos will close and you will enter the Eos welcome screen.

Step 2: Click on the “Settings” button. This will open the ECU.

Step 3: On the right side of the screen, click on the “RPU” button to enter the RVI button setup. A virtual display of the RVI buttons is displayed with the current button settings labeled on each button.

Step 4: Click on a button you wish to alter. A button window will open.

Step 5: Click on the type of button you want it to be (Macro or Eos Hard Key).

- **If Macro** - Click on the Macro # box and enter the desired macro number from the keyboard and press enter. Then click “Accept”.
- **If Eos Hard Key** - Click on the “Eos HardKey” drop down menu and select the hard key you wish to use. Then click “Accept”.

Step 6: Repeat this process for any other buttons you wish to reconfigure.

Step 7: To restore the default buttons at any time, click the “Restore Defaults” button.

RVI and RPU button configurations are interchangeable. Therefore you can import button configurations from one to the other.

To import a button configuration:

You may import an RVI button configuration file from a USB device.

Step 1: Click the “Import” button in the RPU section of the ECU. The RVI will search for valid RVI/RPU button file.

Step 2: If a valid file is found, the ECU will ask you if you want to import the settings. Click “Yes”. The settings will be imported.

Step 3: Click “Ok”.

To export a button configuration:

You may export your RPU button configuration to a USB device.

Step 1: Click the “Export” button in the RPU section of the ECU.

Step 2: If a USB drive is available, the ECU will ask you to choose the desired drive from the drop down menu. Click on the desired USB drive.

Step 3: Click “Accept”. The button configuration will be saved to the USB drive.

Step 4: Click “Ok”.

For more information on settings in the ECU, please see *Eos Configuration Utility (Eos Shell), page 263*.

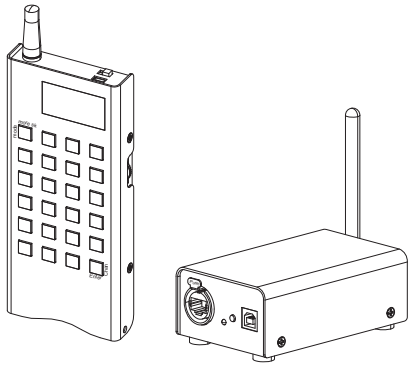
Appendix E

Radio Focus Remote (RFR)

Overview

The Net3 Radio Focus Remote (RFR) provides remote access to frequently used console features such as dimmer and channel checks of conventional and multi-parameter devices (moving lights, etc.) as well as update and record functions.

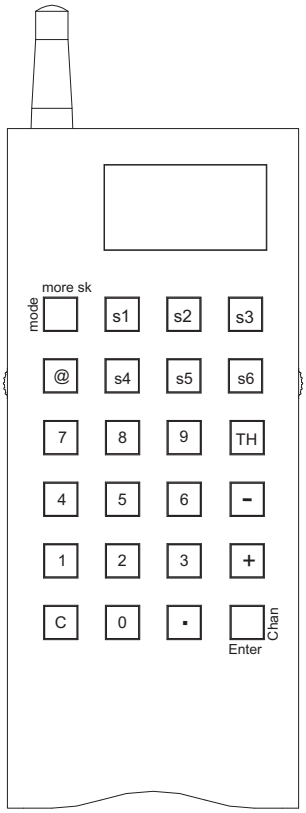
The RFR handheld remote and receiver unit features a high frequency (HF) link for bi-directional communication with a connected console. During operation, the system status can be viewed on the LCD of the remote.



Note: *This appendix covers only RFR operation with the Eos/Ion control system. For information on using the RFR with Congo™ or Congo jr consoles, see the "Congo/ Congo jr User Manual" or the "Net3 Radio Focus Remote Setup Guide" for more information.*

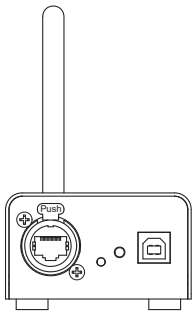
Handheld Remote

The RFR handheld unit features 24 backlit buttons and two push-button thumb wheels, one on either side for scrolling to desired targets and selecting them for interaction. The top side of the remote has an on/off power switch, a high frequency antenna and a USB mini b port. The USB mini b connection is used to supply power for the internal rechargeable NiMH battery cell using the provided power supply.



Base Station Receiver

The receiver includes a USB type B connector and an Ethernet connector (IEEE 802.3af) on the front of the unit for connection to the console (USB) or to a switch in your Net3 network



USB

When the base station is connected directly to a console by USB type B, the RFR is powered by and controls only the console the base station is connected to. ETC supplies a 1.8m (6 ft.) USB cable for base station connection to a console or USB hub. The maximum distance between products is 5m (16 ft.).

When the base station is connected to Eos using USB, the RFR remote will automatically connect to that console when powered.

Note: *If multiple RFR units are to be used separately within a range of each other's receiver units, change the frequency and/or ID settings to avoid conflicts. Reference Change Frequency and ID Setting below for more information.*

For optimal operation, set the base stations apart by at least 5m (16 ft.) to ensure the two units do not interfere with each other's operation.

Change Frequency and ID Setting

A network ID is a separate digital channel on a single high frequency (HF) setting. Changing an ID setting from the default “1” is useful when multiple systems are utilizing the same frequency.

Note: *If you change the frequency and ID settings in the handheld remote you must also change the frequency and ID settings to match in the base station.*

To change the radio settings on your remote:

Step 1: With the remote power off, press and hold the **[Chan / Enter]** button. Continue pressing it and power up the unit. The display window will show the HF Channel selection screen.

Step 2: Choose an HF Channel (1 - 12) by spinning either thumb wheel.

- While setting the HF Channel, the RFR scans each available channel for traffic which may interfere with the RFR. This feature is used to determine what frequency to use in your venue.
- In the “Available:” field the RFR will display ***, **, * or “used”. The asterisks indicate the quality of the signal at that channel. *** is best. “Used” indicates that other traffic is detected on that channel, but the RFR may still function properly.

Step 3: Press **{Next}** ([s1]).

Step 4: Choose a network ID by moving either thumbwheel. Allowed range is from 1 to 99.

Step 5: Press **{Next}** ([s1]).

Step 6: Set the HF power level. This allows you to alter the strength of the transmission signal from the remote. Allowed range is from +10 dBm to +18 dBm.

- A higher value indicates a stronger signal, but shortened battery life. A lower value indicates a weaker signal and an extended battery life.

Step 7: Press **{Save}** ([s3]).

Step 8: Turn off the remote to apply the new settings.

Step 9: Turn on the remote when you are ready for its use.

To change the frequency and ID setting in your base station receiver with an Ion console:

Step 1: In the browser menu, select **[File]**<**[Exit Ion]**. A dialog box opens asking you to confirm.

Step 2: Confirm this command by selecting **{Yes}**. The Ion application will close and the Eos Configuration Utility (ECU) will display.

Step 3: Click the **{Settings}** button. A new settings dialog box will display.

Step 4: Click the **{General}** button and scroll down the list until you reach the “Remote Focus Unit - Frequency” setting.

Step 5: Choose the appropriate HF setting from the drop down box (must be from 1-12, matched with the remote).

Step 6: Scroll the general settings list until you reach “Remote Focus Unit - Group.”

Step 7: Choose the appropriate ID setting from the drop down box (must be from 1-99).

Step 8: Accept the changes by selecting the **{Accept}** button. To cancel changes select **{Cancel}**. The next time you start the Ion application, Ion will automatically send the new settings to any base station that is connected to the console.

Step 9: If you have any difficulty, reset the base station by disconnecting the USB cable from the console and then reconnect it. This cycles power to the unit.

Basic Use Guidelines

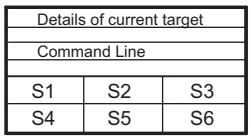
Keypad Function

The keypad illuminates while the keys are in use and remains illuminated while the unit is transmitting data. After a key is released, the keypad will dim the backlight until the next button press or transmission.

Most of the buttons on the handheld remote function exactly as they work on the Ion console. A select few of the buttons require additional explanation.

- **[More SK / Mode]** - When this button is pressed and released, the soft keys will change to the next page of softkeys (if there is more than one page available). Press and hold the [More SK / Mode] button to display the available RFR modes.
- **[Enter / Chan]** - When the RFR is connected for use with an Ion console, this button functions as [Enter], which terminates the command line.
- **[@]** - The first press of this button is “at”. The second consecutive press is “at level”. The third press is “at Out”.
- **[S1 - S6]** - These six buttons are softkeys, defined by the operating mode and identified in the bottom portion of the LCD (see below).
- **[.]** - The first press of this button is “**.**”. The second consecutive press is “**/**”.

LCD General Layout



The handheld remote LCD is divided into four sections. The top section displays status for the selected target. The middle section displays the command line. This section scrolls to accommodate viewing long command syntax. The next section displays the console’s mode status and error status (if any). The bottom section displays the current function of the soft keys (it also displays the various modes when [Mode/More SK] is pressed and held).

Thumbwheels

The two thumbwheels on the RFR (one left, one right) have varying functionality depending on the selected mode (see *RFR Operation Modes, page 298*). Generally speaking, the left thumbwheel acts as a level wheel. It increases or decreases intensity for selected channels. The right thumbwheel behaves as next and last for scrolling through data lists.

Recharge the Handheld Battery

A battery level indicator is found in the upper right corner of the handheld LCD. When the battery is near to a complete drain, the indicator will flash. When charging, the indicator will depict increasing power to verify that it is charging.

When the remote is not in use, set the switch to the “Off” position to guard against accidental key presses and to conserve battery power.

Charge the battery using the USB mini b cable that shipped with your RFR. Connect the USB mini b connector to the handheld remote and the other end to the USB charger adapter supplied with your RFR. You may also attach the USB cable to a powered USB hub, personal computer, or your console. A full recharge may take up to 12 hours.

Provided there is enough battery charge, you may use the remote while charging.

CAUTION: *If you choose to charge the remote from the Eos console, you should unplug the base station before doing so.*

The remote will be functional once it is connected directly to the console. If the base station is still connected and a command is entered on the remote, multiple iterations of the command may register and this may create errors in the Eos command line.

RFR Operation Modes

The Eos RFR defaults to opening in Live mode. There are other modes available in the RFR, however. To switch modes, hold down the [Mode/More SK] button and then select the desired mode from those available by pressing the appropriate softkey. Mode options are: Park, Live, Playback, and Patch.

Park Mode

This mode is used for parking channels and also for “channel check” and “address check” functions.

Softkeys

The following softkeys are available in park mode:

- Address
- Channel
- Last
- Full
- Out
- Next

{Address} and {Channel} are used to select addresses or channels for parking.

- **<Channel> [7] [@] [5] [Enter]** - Parks channel 7 at 50%.
- **{Address} [8] {Full}** - Parks address 8 at full.

{Full} and {Out} are used to set those levels for channels or addresses. {Out} parks the channel or address at 0.

{Next} and {Last} are used for the check functions (see below).

- **[9] [@] [Enter]** - unparks channel 8.

Channel or Address Check

When a single address or channel is selected, using {Next} and {Last} you can rapidly increment or decrement through the channels or addresses to verify function. This only works when a single channel or address is selected on the RFR and then {Next} and {Last} is used.

In this mode, the thumbwheels will also function as next and last commands.

Live Mode

Live mode is used for modifying levels and recording or updating cues. This mode is intended to allow you to make basic adjustments to show data. Buttons and softkeys function as they do within Eos.

The command line is displayed in the LCD to verify the commands you enter. It also displays details for the currently selected channel or the current cue (if no channels are selected).

Softkeys

The following softkeys are available on page one of live mode, which is designed to modify levels:

- Home
- Group
- Sneak
- Full
- Out
- RemDim

The following softkeys are available on page two of live mode which is intended for recording or updating cues:

- Record
- Update
- Time
- Cue only/Track (shown as “Qoly/Tk”)
- Trace
- Macro

In live mode, the left thumbwheel controls the level of the selected channels. The right thumbwheel acts as next and last buttons, defaulting to next or last cue selection for the currently selected cue list.

Playback Mode

Softkeys

The following softkeys are available in playback mode:

- Sub
- Load Q
- Stop/Bk
- Macro
- Goto Q
- Go

{Sub} is used to set the level of a submaster.

- **{Sub} [5] [@] [7] [Enter] -** sets submaster 5 to 70%.

{Load Q} allows you to load a cue into the pending file *for the master playback fader pair only*.

- **{Load Q} [5] [Enter] -** Loads cue 5 of the master playback fader to the pending file for that fader. Pressing {Go} will execute this cue.

{Go} and {Stop/Bk} are duplicates of the [Go] and [Stop/Back] buttons for the Eos master fader pair.

{Macro} allows you to execute a macro.

- **{Macro} [3] [Enter]**.

{Goto Q} allows you to jump to any cue in the show.

- **{Goto Q} [6] [Enter]** - plays back cue 6 for the master playback fader pair.
- **{Goto Q} [4] [.] [.] [2] [Enter]** - plays back cue 2 from cue list 4. To play back cues from any other list than the one loaded to the master playback fader pair *requires* you to specify the cue list in the command line.

The left thumbwheel controls intensity of a selected submaster. The right thumbwheel acts as next or last for the most recently selected cue list.

Patch Mode

In patch mode, the LCD displays the channel, address and type for the currently selected channel(s).

Softkeys

The following softkeys are available in patch mode:

- Address
- A
- B
- Fixture Controls (shown as: FixCtrl)

{Address} allows you to change the address of the selected channel.

- **[1] {Address} [1] [Enter]** - addresses channel 1 to output 1.

{A} and {B} are used for patching dimmer doublers.

- **[9] [7] [Th] [1] [0] [2] {Address} [1] {B} [Enter]** - patches channels 97-102 to outputs 1B-6B (for dimmer doubling).

{FixCtrl} is used to display the fixture controls for a channel (if available).

- **[6] {FixCtrl}** - displays fixture controls for channel 2.

Technical Specifications

Handheld Transmitter

Output - Default HF:1 (2.410 GHz) with 11 additional HF: channels available (2.410 - 2.465). 99 groups available per channel.	
Antenna - Helical, fixed.	**Connections** - Integral USB mini b connector for charging the unit.
Working range - 300m (900 ft) indoor, 200m (656 ft) in free field.	**Power** - 2x AA NiMH rechargeable battery. (Recharge using the USB connection.)
Size - 160mm(4.5”) x 72mm (2.6”) x 20mm (.8”) excludes antenna.	**Weight** - 400g (14 oz.) includes antenna.

Base Station Receiver

Data - USB type B. Ethernet not available on initial release.	**Connections** - Integral USB connector to console or RPU. Ethernet not available on initial release.
Power - USB (Power over Ethernet (PoE) is not available on initial release).	**Maximum USB cable length** - 5m (16.5’) from power source using USB.
Size - 112mm(4.4”) x 71mm (2.7”) x 45mm (.7”) excludes antenna.	**Weight** - 380g (13 oz.) includes antenna.

Appendix F

Universal Fader Wings

Overview

Universal fader wings can be used in conjunction with your Ion console to create up to 200 additional submasters. The wings are available in 10 x 2 or 20 x 2 configurations.

The fader wings are designed to physically attach to your Ion console, thereby receiving power from the console and eliminating the need for the external power supply. Or you may connect wings to Ion using a USB cable and provide power using an external power supply.

Rules of Connection

Physical attachment to Ion

When physically attaching wings to Ion, power constraints limit you to a total of no more than six LCDs *total* in the system. This ***includes*** the LCD in the Ion console. As the 10 x 2 fader wing has one LCD and the 20 x 2 fader wing has two LCDs, consider this restriction when attaching numerous wings.

You are also restricted to using no more than three fader wing units per side of Ion, provided that you do not exceed the six LCD limit.

For example, it is not possible to connect three 20 x 2 wings as this would be a total of 7 LCDs (including the LCD in Ion). You may connect five 10 x 2 wings, but three must be connected on one side of Ion and two connected to the other.

USB connection only

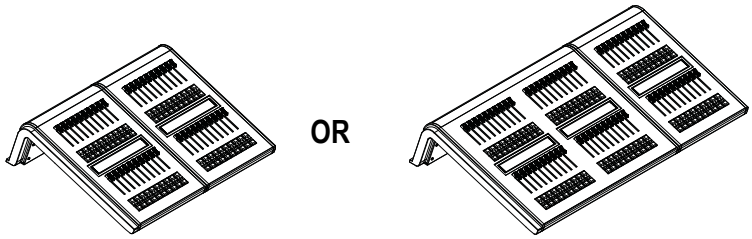
When connecting fader wings using an external power supply and USB cable, up to three wings can be connected together at once. Again, the six LCD limit applies to any single power supply. Therefore, this method would permit the use of three 20 x 2 wings but would not allow, for example, four 10 x 2 wings to be connected as this exceeds the three wing limit.

Connecting Wings to Ion

Up to three (3) Universal Fader Wings may be connected together and then connected to Ion using a USB cable only or by physically attaching them to the Ion console.

The best way to connect wings together is to attach them in order from left to right.

Connect Universal Fader Wings

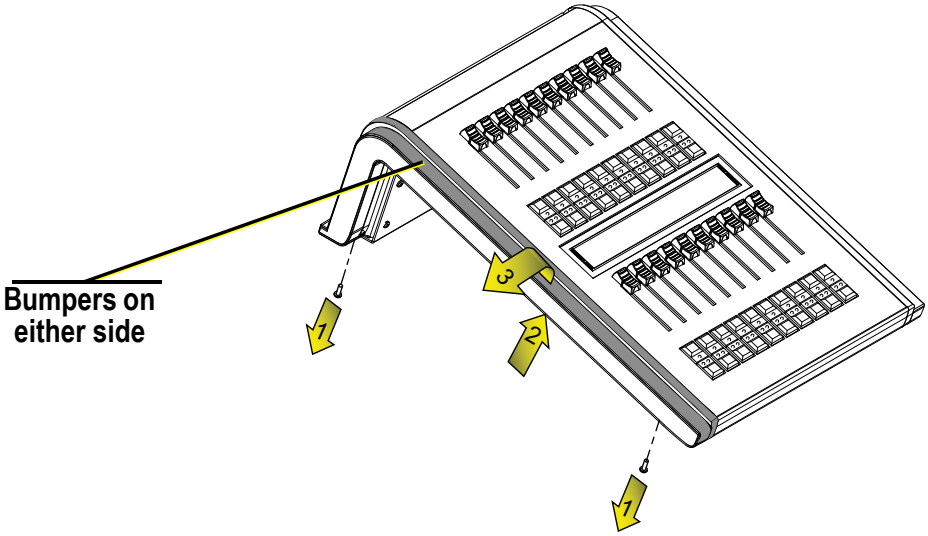


Step 1: Using a #1 Phillips head screwdriver, on the underside of the wing(s) remove the two screws securing the bumpers that will be removed from the appropriate side or sides of the wings. The bumpers will be removed in a later step.

a: Carefully turn the wing over and place it faders-down on a clear, flat work surface.

CAUTION: *Do not set the console on the connector side (rear panel). Instead, place it face down on the faders.*

b: Remove and save the two screws securing the bumper to the side of the wing.



Step 2: Turn the wing over again and return it to its upright position.

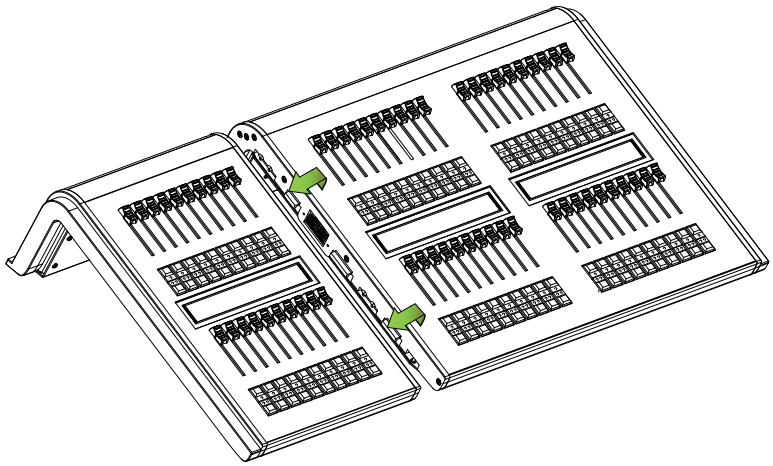
Step 3: Remove the bumper(s) from the wing.

a: **Right Side** - Gently pull the bumper up until it is flush with the facepanel.
Left Side -Gently push the bumper down until it loosens from the facepanel.

b: Pull the bumper away from the facepanel until it is free from the wing.

Step 4: Repeat steps 2 and 3 for each side of each wing that needs to be exposed.

Step 5: Align the two wings. Lift the wing on the right and place it gently on the hooks provided on the wing on the left. Check that the two wings are aligned properly front and back, then press down gently on the wing on the right until it is fully seated. This should be a smooth connection but may require a little force.

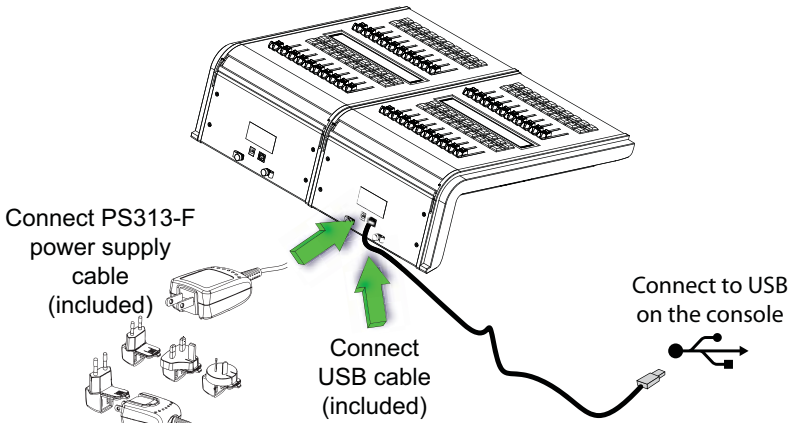


Step 6: Repeat above procedure to connect another wing to the right end of the pair, if desired.

Step 7: Re-insert screws to secure wings together and secure the bumpers to the sides of the wings.

Step 8: Once all of the desired wings are connected (within the limits above), you may use the same procedure to attach the wings to Ion.

Connect Universal Fader Wing(s) to Console with USB Cable



Step 1: With the console power off, attach the USB cable (provided) between the console and one wing as shown above. If multiple wings are joined, only one power and one USB connection is required for all joined wings.

Step 2: Using the power supply adaptor kit, connect the fader wing to a power source.

Step 3: It is recommended that you run the power and USB cables through the strain relief included on the back of the wings.

Step 4: Turn the console on.

User Guidelines

Fader Wing Interaction With Ion

Ion will automatically recognize the fader wings and their configuration (10 x 2 or 20 x 2) once they are plugged into or attached to the console. The system will configure the lower row of faders contiguously starting with the furthest connected panel as submaster 1. The second row then begins with the next consecutive number over the last numbered fader on the bottom row. You can then use the fader wings as submasters, adjusting settings from either the console or the wings themselves.

- Fader wings can only record intensity.
- Latest-Takes-Precedence (LTP): any levels set on the console will override settings on the wings.

Fader Wing Paging

The fader wing is paged using the [Fader Controls] button on the Ion console.

To change the fader page of a fader wing:

Step 1: Press and hold the **[Fader Controls]** button on the Ion console. The LCD on the fader wing will display the available pages beneath the fader bump buttons.

Step 2: Press the bump button corresponding to the page of submasters you wish to display on the fader wing. The fader wing will display those submaster numbers after your selection is made.

A maximum of 200 submasters are available distributed across all connected fader wings. For example, if only one wing (2 x 10) were attached, there would be 10 pages of submasters. If there were two wings (2 x 10) attached, there would be 5 pages of submasters.

Using the Faders

When the page is changed, the submaster LEDs will illuminate in the color of the new submaster loaded on the page (green for additive and red for inhibitive). Fader wing submasters are not motorized, therefore when you change pages you may have to manually reset the fader to the proper location to reflect its current output level. If a submaster setting must be matched to gain control, the LED will flash quickly in the appropriate color. The LED will stop flashing and illuminate normally once the fader has been moved to the required location.

Otherwise, LED illumination states follow the conventions of the main face panel when submasters are using fade and hold/dwell times. You may use the fader wing submasters in the same way as you would use those on the console.

Using the Buttons

Each fader is equipped with two buttons beneath the potentiometer. The bottom button is the bump key. The top button is the solo key.

LCD

The display at the center of the fader wing shows the sub number, label, and current value (0-100%) of the fader above and the fader below. When the page is changed, the current value will display the necessary percentage the fader must be set at to match the required level of the submaster.

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You shall indemnify, defend and hold harmless ETC and the Supplier (or Suppliers, as applicable) from and against any and all losses, damages, claims, liability, costs and expenses (including reasonable attorney fees), suffered or incurred by ETC or the Supplier as a result of any claim by any third party that by reason of your use or application of any intellectual property right contained in the Software constitutes an infringement of any third party's property rights, including but not limited to, patent and copyright.

14. **Destruction of the Software**

Upon termination of this EULA, you must destroy the Software, the related documents and any and all copies thereof within ten (10) days after the date of termination and submit documents evidencing such destruction to ETC.

15. **Miscellaneous**

A) Complete Agreement: This Agreement is the complete agreement between the parties with respect to the Software and supersedes any other communication, written or verbal, with respect to the Software.

B) Severability: The provisions of this EULA are severable; if any term or provision shall be deemed void or unenforceable by a court of competent jurisdiction, such declaration shall have no effect on the remaining terms and provisions hereof.

C) Governing Law: This Agreement shall be governed by the laws of the State of Wisconsin, USA.